AF/Film

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/587,979
Applicant	:	Vlad Stirbu et al.
Filed	:	10 October 2006
TC/AU	:	2476
Examiner	:	Sori A. Aga
Docket No.	:	800.0124.U1(US)
Customer No.	:	10,948
Title	:	METHOD AND SYSTEM FOR OPTIMIZATION OF DATA TRANSFER BETWEEN NETWORKED DEVICES

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S APPEAL BRIEF

Sir:

Commensurate with the Notice of Appeal filed on 16 September 2011, Applicant/Appellant (herein, "Applicant") hereby submits this Appeal Brief to the Board of Patent Appeals and Interferences (hereinafter, the Board) under 37 C.F.R. §41.31. Please charge Deposit Account No. 50-1924 for the $620 appeal brief fee set forth in 37 C.F.R. §41.20(b)(2). This Appeal Brief is filed within two months after a notice of panel decision was mailed (3 November 2011), and the undersigned representative believes that a one-month extension of time is due. Please charge Deposit Account No. 50-1924 for the $150 fee for a one-month extension of time. However, should the undersigned attorney be mistaken regarding the number of months (or for any other fee), please consider this a petition for an extension of time under 37 C.F.R. §1.136(a) or (b) that may be required to

avoid dismissal of this appeal (or as a petition for any other required fee), and debit Deposit Account No. 50-1924 as appropriate.

(1) REAL PARTY IN INTEREST

The real party in interest (RPI) is Nokia Corporation of Espoo, Finland, cited in an assignment of the U.S. application recorded on 10 October 2006 at reel 018429 and frame 0839.

(2) RELATED APPEALS AND INTERFERENCES

There are no other pending appeals or interferences of which the undersigned representative and assignee/RPI is aware that will directly affect, be directly affected by or have a bearing on the Board's decision in this appeal.

(3) STATUS OF CLAIMS

Claims 16-28, 32-34, 36, and 38 stand rejected and are being appealed herein. Claims 1-15, 29-31, 35, and 37 were previously canceled.

(4) STATUS OF AMENDMENTS

In an after-final Response dated 4 August 2011, the Applicant proposed a minor amendment to claim 38 to add a period to the end of the claim. This amendment was proposed subsequent to the final Office Action dated 24 May 2011. The Advisory Action dated 12 September 2011 made no mention of the amendment. It is assumed, therefore, that this amendment was not entered.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Claim 16 is directed to a method. See, e.g., FIG. 3 and page 5, line 35 to page 6, line 17. The method includes checking a destination address of a received packet

(see block 302 of FIG. 3; page 15, line 35 to page 16, line 1) and comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address (see block 303 of FIG. 3; page 16, lines 1-5). The method includes preventing the transmission of the packet to a first device in response to the addresses matching (see block 304 of FIG. 3; page 16, lines 1-17) and forwarding the packet to at least the first device in response to the addresses not matching (see block 305 of FIG. 3; page 16, lines 1-17).

Claim 21 is directed to a system. See FIGS. 1, 2a, and 2b, and page 3, line 30 to page 5, line 34. The system includes a first device (e.g., a mobile handheld device, MHD, on the left of FIG. 2a and in FIG. 1, a second device (e.g., a home network device, HND, on the right side of FIG. 2a and in FIG. 1), and an intermediate node (e.g., the interworking unit, IWU, intermediate the HND and the MHD in FIGS. 1 and 2) configured to arrange data transmission between the first device and the second device. At least the second device (e.g., HND in FIGS. 1 and 2a) is configured to multicast and/or broadcast packets to devices in the system. The intermediate node (e.g., IWU as shown in FIGS. 1 and 2a) is configured to check a destination address of a packet received from the second device. The intermediate node is configured to compare the destination address of the packet with at least one predetermined multicast and/or broadcast address. The intermediate node is configured to prevent the transmission of the packet to the first device (e.g., the MHD in FIGS. 1 and 2b) in response to the addresses matching, and is configured to forward the packet to at least the first device (e.g., the MHD in FIGS. 1 and 2b) in response to the addresses not matching. See also, e.g., page 5, line 35 to page 6, line 17.

Claim 22 is directed to an apparatus. See, e.g., FIG. 2b and page 5, lines 14-34. The apparatus includes a processor (e.g., CPU in FIG. 2b) configured to check a destination address of a received packet; compare the destination address of the packet with at least one predetermined multicast and/or broadcast address; prevent the transmission of the packet to a first device in response to the addresses matching; and forward the packet to at least the first device in response to the addresses not matching. See also, e.g., page 5, line 35 to page 6, line 17.

Claim 32 is directed to a memory. See, e.g., MEM in FIG. 2b, and page 5, lines 14-34. The memory stores a computer program (see, e.g., the IWM, interworking means, and page 5, lines 14-34). The computer program is configured to control a processor (e.g., CPU shown in FIG. 2b) to perform the following: check a destination address of a received packet; comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing transmission of the packet in the system to a first device in response to the addresses matching; and forwarding the packet to at least the first device in response to the addresses not matching. See also, e.g., page 5, line 35 to page 6, line 17.

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. The first grounds for rejection presented for review by the Board is whether claims 16-18, 21-25, 28, 32, 34, and 38 are patentable under 35 U.S.C. §103(a) over Rune (U.S. Patent Publication no. 2004/0167988) in view of Jou, U.S. Patent Publication no. 2005/0036489.

B. The second grounds for rejection presented for review by the Board is whether claims 19, 20, 26, 27, and 33 are patentable under 35 U.S.C. §103(a) over Rune in view of Vasisht, U.S. Patent Publication no. 2004/0133689.

C. The third grounds for rejection presented for review by the Board is whether claim 36 is patentable under 35 U.S.C. §103(a) over Rune in further view of Tung, U.S. Patent Publication no. 2006/0136562.

(7) ARGUMENT

A. First grounds for rejection

Claims 16-18, 21-25, 28, 32, 34, and 38 stand rejected under 35 U.S.C. U.S.C. §103(a) as being obvious over Rune in view of Jou. Applicant respectfully disagrees. The currently pending independent claims are claims 16, 21, 22, and 32.

1. Claims 16, 17

The Examiner rejected claim 16 under 103(a) being unpatentable over Rune in view of Jou. Applicant respectfully disagrees.

Claim 16 is reproduced below.

> A method comprising:
>
> checking a destination address of a received packet;
>
> comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address;
>
> preventing the transmission of the packet to a first device in response to the addresses matching; and
>
> forwarding the packet to at least the first device in response to the addresses not matching.

The Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose at least the subject matter of comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address and preventing the transmission of the packet to a first device in response to the addresses matching.

The Examiner then points to Jou for alleged disclosure of this subject matter. However, Jou does not disclose this subject matter for at least the following reasons.

a) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): First Reason

The instant application has a priority date of 6 February 2004 under, e.g., M.P.E.P. §201.13, 35 U.S.C. §119 and 37 C.F.R. §1.55. That is, the priority date of 6 February 2004 is based on a Finnish application filed on that date, which later became an international (P.C.T.) application filed on 4 February 2005. The international application entered national stage in the United States on 10 October 2006 as the instant application. A proper claim for priority was made at least in the Declaration filed on 10 October 2006. In fact, the U.S. Patent Publication no. 2007/0127394 of the instant application lists "Foreign Application Priority Data" as "Feb. 6, 2004", as shown by the following portion of the first page of this publication:

US 2007/0127394 A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0127394 A1**

Stirbu et al. (43) **Pub. Date: Jun. 7, 2007**

(54) **METHOD AND SYSTEM FOR OPTIMIZATION OF DATA TRANSFER BETWEEN NETWORKED DEVICES**

(75) Inventors: **Vlad Stirbu**, Tampere (FI); **Mika Saaranen**, Tampere (FI)

Correspondence Address:
SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182 (US)

(73) Assignee: **Nokia Corporation**

(21) Appl. No.: 10/587,979

(22) PCT Filed: Feb. 4, 2005

(86) PCT No.: PCT/FI05/00077

§ 371(c)(1),
(2), (4) Date: Oct. 10, 2006

(30) **Foreign Application Priority Data**

Feb. 6, 2004 (FI) 20040179

Publication Classification

(51) Int. Cl.
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)

(52) U.S. Cl. 370/254; 370/389

(57) **ABSTRACT**

The invention relates to a method of arranging communication in a local area networking system comprising a first device, a second device and an intermediate node for arranging data transmission between the first device and the second device. The second device is arranged to multicast and/or broadcast messages to devices in the system. The transmission of multicast and/or broadcast messages to the first device is prevented by the interworking means.

Therefore, the priority date of the instant invention is 6 February 2004.

Turning to Jou, the published application 2005/0036489 was filed on 10 August 2004, after the priority date of 6 February 2004 of the instant application. Jou's published application claims priority from provisional application 60/495,186, a copy of which is enclosed herein in section (9), "Evidence Appendix". This copy was also submitted in the after-final amendment dated 4 August 2011 (as Appendix A). The Jou provisional application was filed on 15 August 2003. Therefore, for material to be cited under 35 U.S.C. §102 (and therefore §103) against the instant application, that material must exist prior to the priority date of the instant application of 6 February 2004.

The Examiner cites to paragraph 29 of Jou's published application, which states the following:

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. The wireless transport device will determine whether or not the DA filed is the same as the local MAC address of this device (510). If positive, the wireless transport device drops the frame because it is an echoed frame (step 530). Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct

> neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

The Examiner relies on this section of Jou's published application in order to assert that Jou's published application discloses the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address":

> response to the address not matching. However, Jou teaches comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching **[see paragraph 0029 where a wireless transport device (intermediate node) receives a broadcast frame; the wireless transport device determines whether or not the Destination Address field is the same as the local MAC address (predetermined multicast address) of this device; if positive (in response the addresses matching), the wireless transport device drops the frame]**. It would have been obvious for a person having ordinary skill in the art to

Final Office Action, dated 24 May 2011. That is, the Examiner is relying on the statement "The wireless transport device will determine whether or not the DA [destination address] filed (sic – should be "field") is the same as the local MAC address of this device (510)" in paragraph 29 of Jou's published application in order for Jou's published application to disclose the subject matter in the instant claims of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address".

However, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding a destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published

application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding a destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102.

Consequently, the sections cited by the Examiner of Jou's published application cannot be cited as prior art against the claims of the instant application. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

Applicant made similar arguments in the after-final Amendment dated 4 August 2011. In response, the Examiner in the Advisory Action dated 12 September 2011 stated the following:

> In response to applicant's argument that the Jou reference is not valid because the provisional application does not contain the cited paragraph (see applicant's remarks page 9-10), it should be noted that Jou's provisional application still have support for said paragraph (See second paragraph under 'summary of the invention' in page 3 where Jou teaches "When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize (compare and determine) it should drop the frames without processing")

Advisory Action dated 12 September 2011, page 2. What Jou's provisional application states is the following:

> 4. The method for a transport device when relays a broadcast frame, to add the address information of the previous hop from where the frame comes into the transmitted frame.
>
> 5. The method according to claim 4, wherein:
>
> When a wireless transport device receives a broadcast frame whose "previous hop" field contains its own address, the device can drop the frame without any further processing.
>
> For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realized it should drop the frames without processing.

Jou's provisional application, page 1. See also:

> To filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame so once the previous hop receives the frames, it can ignore these echo frames without further processing. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize it should drop the frames without processing.

Jou's provisional application, page 3.

Regardless, Jou's provisional application does not state or imply that the "previous hop" field **is a destination address field** (in fact, Applicant cannot find the term "destination address" used anywhere in Jou's provisional application). This is important because the Examiner is using Jou to allegedly disclose the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address". Jou's provisional application simply does not disclose anything related to a destination address field or its use. Furthermore, the "previous hop" field disclosed in Jou's provisional application certainly does **not** contain a "destination address", as this field contains instead "address information of the previous hop from where the frame comes". See page 1, claim 4 (and claim 5) of Jou's provisional application.

As stated above, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding the destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding the destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

b) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): Second Reason

Even if the cited sections of Jou's published application are prior art against the instant independent claims, Applicant respectfully submits that Jou's published application does not disclose the subject matter the Examiner asserts is disclosed by Jou's published application. For instance, the Examiner cites to paragraph 29 of Jou's published application (emphasis added):

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. **The wireless transport device will determine whether or not the DA filed (sic – should be "field") is the same as the local MAC address of this device (510).** ***If positive, the wireless transport device drops the frame because it is an echoed frame (step 530).*** Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the

> route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

This section of Jou's published application indicates that a determination is made of whether or not the DA (destination address) field is the same as the local MAC (media access control) address of the device. It is known in the art that a MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment. What the sentence "If positive, the wireless transport device drops the frame because it is an echoed frame (step 530)" appears to mean is that the current device previously transmitted the frame, and the frame is being echoed back to the device. Thus, the device put the MAC address of itself into the DA field of the frame, and transmitted the frame. When the device receives a frame that has its MAC address, the device then determines the frame is an echoed frame and can be ignored. See also paragraph 22 of Jou's published application (emphasis added):

> [0022] Depending on the method in unicast routing path calculation, the forwarding table for unicast frames can be used as the table that is used to look up the incoming neighboring device for a broadcast frame originator (i.e. FIG. 2). In this case, there is no extra effort in generating the broadcast frame reduction table. The other method to reduce the resource spending on broadcast frames is to reduce the processing effort for echoed broadcast frames. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, most likely device X will receive both the frames. Using the method mentioned earlier can cause the frames being dropped eventually. However, a table lookup for each frame will be needed for device X. To relieve the processing load, N1 and N2 can both add the address of X inside the frame. When X receives a broadcast frame, it can check whether the frame is echoed from itself. If so, the frame can be dropped immediately without processing. **Therefore, to filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame.** This can be achieved by using an unused field in the 802.11 MAC header. In broadcasting, the Address 3 (DA, destination address) of FIG. 3 is not used. The "previous hop" information is carried in the location the Address 3 (DA, destination address).

Moreover, the MAC address of the device is not a "broadcast address", as the MAC address is the address of the device itself: "The wireless transport device will determine whether or not the DA filed (sic – should be "field") **is the same as the local MAC address of this device** (510)." Paragraph 29 of Jou's published application. See also paragraph 22 of Jou's published application: "Therefore, to filter out echo frames, broadcast frames have to carry the address information of [the] **previous hop** in the transmitted frame." Another device receiving the frame with the MAC address of the previous hop is not going to determine the MAC address is a broadcast address or use the MAC address as a broadcast address. This means that the MAC address of a device will not be the same as the broadcast address. The same is true for a multicast address: a multicast address will not be the same as a MAC address. This is true because, by definition, the multicast address is to be used for communication with multiple addresses/devices, while a MAC address is made to be specific to a single device.

To put this a different way, any device receiving a packet with a destination address that is the same as a MAC address of one of the devices on a network should forward the packet toward the device having that MAC address. However, there is only **one device** in the network with that MAC address. Therefore, the MAC address is not a broadcast address (a packet addressed with a broadcast address is destined for every device in the network) or is not a multicast address (a packet addressed with a multicast address is destined for at least two devices in the network).

In the Advisory Action dated 12 September 2011, the Examiner states the following:

'multicast/broadcast and destination address). The recitations broadcast/multicast address and multicast address are not defined by the claim; the specification does not provide a clear explanation of said terms. In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art [MPEP 2111.01]. In this case Jou's destination address (although MAC address of the previous hop) is considered a multicast address since it is a multicast destination address (as shown above and discussed in paragraph 0022-Jou). Applicant's arguments do not show how the claims prevent a reasonable broadest interpretation of said terms would prevent such interpretation as supported by the Jou reference.

One skilled in the art knows what the terms "MAC address", "multicast address", and "broadcast address" are. See, e.g., http://en.wikipedia.org/wiki/MAC_address ("MAC address"), http://en.wikipedia.org/wiki/Multicast_address ("multicast address"), and http://en.wikipedia.org/wiki/Broadcast_address ("broadcast address"). In fact, it is known that a broadcast address in MAC (e.g., 802.11) is all ones, e.g., FFFFFFFF for 32 bits in hexadecimal. See paragraph 27 of Jou: "a broadcast frame in WITnet is a WDS frame with Receiver Address Field (please refer to FIG. 3) being, for instant (sic), 0xffffffffffff". See also http://en.wikipedia.org/wiki/MAC_address: "Packets sent to the broadcast address, all one bits, are received by all stations on a local area network. In hexadecimal the broadcast address would be FF:FF:FF:FF:FF:FF". Jou is using the broadcast address of 0xffffffffffff consistently with what is known in the art for one particular network and protocol.

Additionally, even the term "destination address" is respectfully being read by the Examiner in a manner not consistent with the way one skilled in the art would read the term. Applicant's claim recites (in general) comparing the destination address of the packet with at least one multicast and/or broadcast address. In Jou's published application, a value in a destination address **field** is compared with a MAC address of the device receiving the packet. (See paragraph 29 of Jou's published application.) What is in the destination address **field** is not a "destination address" as this term is commonly used in the art. Instead, it is the MAC address of the previous hop. See the last sentence of paragraph 22 and paragraph 29 of Jou's published application. In fact, the actual "destination address" of the packet in Jou's published application appears to be in the

Receiver Address Field and has a value of 0xffffffffffff. See paragraph 27 of Jou. Thus, even the term "destination address" is being read by the Examiner in a way that is not the way one skilled in the art would read this term.

Therefore, Applicant respectfully submits that it is the Examiner who is interpreting the terms "multicast address" and "broadcast address" in a way that is not in accord with the way these terms would be interpreted by one skilled in the art. That is, one skilled in the art would not interpret MAC, broadcast, and multicast addresses in the way the Examiner is interpreting these terms in order to get Jou to read on the instant independent claims.

Thus, for at least the above reasons, Jou's published application does not disclose at least the subject matter of "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", as recited in claim 16 and generally in the other independent claims.

Because the Examiner admits that Rune does not disclose the subject matter in the claims of "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and because Jou's published application does not disclose this certain subject matter, the combination of Rune and Jou does not disclose this subject matter. Applicant respectfully submits the 103(a) rejections against the independent claims must fail.

c) The combination of Rune and Jou

The Applicant has stated above that the combination of Rune and Jou does not disclose all features of the independent claims, including claim 16. For instance, the Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose this subject matter. The Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the combination of Rune and Jou does not teach or imply this subject matter.

Nonetheless, the Examiner states the following in the Advisory Action dated 12 September 2011:

> Examiner respectfully disagrees with applicant's assertion that Rune does not teach "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" and "preventing the transmission of the packet to a first device in reponse to the addresss matching" (see applicant's remarks pages 13-16). This assertion amounts to attacking the reference idividually. The office action relied upon the Jou reference for teaching "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" (specially the step of 'comparing', 'destination address' and 'multicast address' are disclosed by the Jou reference). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, examiner respectfully disagrees with applicant's statements that seem to imply that filtering is done (only?) by filtering out packets by type and not address. In contrast, even though Rune teaches filtering out by type, Rune also teaches filtering out by address (see paragraph 0215). Therefore, one having ordinary skill in the art would take Rune (for teaching filtering out broadcast packets by address, and use Jou to learn how to filter by address (i.e. comparing the destination address of the packet with multicast address).

Applicant respectfully submits that Applicant has stated multiple times that the combination of Rune and Jou does not disclosed the features of the independent claims, as the Examiner admits that Rune does not disclose this subject matter and the Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. If the Examiner admits that Rune does not disclose certain subject matter and Applicant shows that some or all of that subject matter is not disclosed or implied by Jou, then the combination of Rune and Jou **cannot** disclose or imply that subject matter.

For sake of argument, however, Applicant will now show that even though the Examiner has admitted that Rune does not disclose "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and "preventing the transmission of the packet to a first device in response to the addresses matching", Applicant will now show the same.

Applicant cannot find in Rune where a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

There are a number of indications that can include multicast addresses in Rune. See, e.g., paragraphs 156, 173, 186, and 187 of Rune. However, nowhere in these paragraphs (or any other paragraphs) of Rune can Applicant find a comparison that is performed between a multicast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Regarding broadcast addresses, Rune makes specific reference to these addresses in paragraphs 215 and 291, neither of which involves a comparison using a destination address and a broadcast address.

Rune does discuss packet filtering. See paragraphs 195-218 of Rune. If this packet filtering is in any way related to a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, Applicant cannot find in Rune where that is the case. In fact, Rune states the following (emphasis added):

> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. The NAL packet type filtering, in some embodiments of the invention, is very simple: **all NAPSA broadcast type**

> **and scatternet broadcast type packets are passed by the packet type filtering function 912 to the NAP-IPH**, while all other packet types are passed to the address filtering function 914.

This section of Rune appears to teach away from comparing a broadcast address and a destination address, as all broadcast type packets are simply forwarded.

In paragraph 215, Rune states the following (emphasis added):

> [0215] For broadcast ARP replies received from the LAN, the address filtering process is much more complicated. The address filtering function first extracts the "target MAC address" from the ARP reply. This is the MAC address of the intended receiver of the ARP reply. In other words, this is the MAC address of the node that sent the ARP request (or possibly the ARP-route-request) that triggered the ARP reply. **The target MAC address is extracted even though the destination address of the packet is a broadcast address. The target MAC address is then made subject to the same check as a destination address of a unicast packet.** If the target MAC address was not found in the address table or if it was found in the address table and the address table indicated that the corresponding node is located on the scatternet side of the NAP, the packet is passed to the NAP-B. **The address filtering function then has an option to convert the broadcast ARP reply into a unicast ARP reply by replacing the broadcast address with the target MAC address in the destination address field.** The purpose of this option is to save resources (mainly bandwidth) in the scatternet.

None of the highlighted (or any other portion) of this cited text indicates in any way that a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

What Rune states regarding broadcast types is the following (emphasis added)

> [0123] FIGS. 10-15 illustrate the coverage areas of the different broadcast types. The NAPSA broadcast type, as the name implies, is used to broadcast packets to a single NAPSA. This is illustrated in FIG. 10 (which is similar to FIG. 8), where each isolated gray area 1000-1008 represents a different NAPSA broadcast area. **A NAPSA broadcast packet is not allowed to leave its broadcast area.** Thus, NAPSA broadcast packets are not forwarded to the LAN and are not allowed to cross a NAPSA border.

[0124] The scatternet broadcast type, as the name implies, is used to broadcast packets within the scatternet. This arrangement is illustrated in FIG. 11, where each contiguous gray area 1100-1106 represents different broadcast areas for a scatternet broadcast packet. **Such broadcast packets are not forwarded to the LAN.** When more than one AD exists in a scatternet, the scatternet broadcast packets carrying higher layer protocol packets, i.e. packets from protocol layers above the NAL, e.g. IP, are not allowed to cross an AD border. These packets are consequently limited to a part of the scatternet belonging to the same AD. Scatternet broadcast packets that are not carrying packets from higher layer protocols, such as NAL control packets, however, are allowed to cross AD borders and may therefore still be broadcast in the whole scatternet. A NAL control packet does not encapsulate data from a higher protocol layer and is only used to transfer signaling and control information between NAL entities in different Bluetooth nodes. This arrangement is illustrated in FIG. 12, where each contiguous gray area 1200 and 1202 represents the broadcast area of an NAL control packet.

[0125] The AD broadcast type covers the LAN and any attached scatternets that are associated with the same AD as the LAN. These broadcast packets are forwarded by NAPs from/to the LAN to/from the scatternet, but the NAPSA borders in the scatternet are respected. This arrangement is illustrated in FIG. 13, where each contiguous gray area 1300-1304 represents the broadcast area of an AD broadcast packet. An AD broadcast packet is used to reach all the nodes in the AD (including the nodes on the LAN). All broadcast packets that are forwarded from the LAN to the scatternet are sent using the AD broadcast type.

[0126] The scatternet-AD broadcast type is a special broadcast type used only for route requests. This broadcast type is, as the name implies, a combination of the scatternet broadcast type and the AD broadcast type. The scatternet-AD broadcast packets are distributed through the entire scatternet without respecting the NAPSA borders, as well as the entire AD via the NAPs. However, the NAPSA borders are respected after a scatternet-AD broadcast packet re-enters the scatternet via a NAP.

Thus, in Rune, the NAPSA broadcast packets are not forward to a scatternet, and the scatternet broadcast packets are not forwarded to the LAN. However, these packets are not forwarded based on their broadcast type, which is defined by an indicator in a NAL (network adaptive layer) header (emphasis added):

[0122] In addition to the routing protocol discussed above, the NAL also has a broadcast mechanism. (Note that broadcasting on the LAN is inherent in the shared medium and no "broadcast" mechanism is needed.) In accordance with embodiments of the invention, the NAL includes four different types of broadcasts: NAPSA broadcast, scatternet broadcast, AD broadcast, and scatternet-AD broadcast. The differences

> between broadcast types lie in the scope of the distribution and how the NAPs and other nodes at the NAPSA borders treat the different broadcast packets. **Note that the broadcast type is defined by an indicator in the NAL header.** In that sense, these different broadcast types can only exist in the scatternet. On the other hand, an Ethernet broadcast packet (originated on the LAN) that is forwarded from the LAN to the scatternet becomes an AD broadcast packet when it is forwarded into the scatternet. The broadcast type may be indicated in the NAL header, for example, with a two-bit indicator, as indicated in Table 2.

Thus, the broadcast type is defined in Rune by an indicator in the NAL header.

It is clear that filtering of broadcast packets in Rune is performed without examination of destination addresses for packets (emphasis added):

> [0196] The second main component of the invention is the packet filtering mechanism. As already mentioned, a NAP does not indiscriminately forward packets. Instead, it uses the packet filtering mechanisms (see FIG. 9) to reduce the number of unnecessarily forwarded packets. For example, forwarding is unnecessary when both the source and the destination node are located on the same side of the NAP. Furthermore, NAL broadcast packets of the NAPSA broadcast type and the scatternet broadcast type are always blocked by the packet filtering mechanisms. **Only those packets that pass the packet filtering mechanisms are forwarded to the scatternet.** The generated useless traffic is a waste of resources, especially so in the scatternet where radio resources and processing resources are scarce. Furthermore, this could lead to the scatternet being flooded by traffic from the LAN with its shared medium and much higher capacity. Therefore, a packet filtering mechanism is needed in order to limit the forwarding of unnecessary traffic. The packet filtering is based on the destination address and the NAL packet type. Filtering may also be based on higher layer protocols.
>
> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. **The NAL packet type filtering**, in some embodiments of the invention, **is very simple: all *NAPSA broadcast type and scatternet broadcast type packets* are passed by the packet type filtering function 912 to the NAP-IPH, while *all other packet types* are passed to the address filtering function 914.**

Thus, packets having the NAPSA broadcast and scatternet broadcast ***types*** are filtered, and **all other packet *types*** are passed to an address filtering function, for forwarding to the correct address. See also, e.g., paragraphs [0222], [0224], [0237] of Rune.

As is noted in paragraphs [0125] and [0197] from Rune above, packets having the AD broadcast type are forwarded, as are packets having the scatternet-AD broadcast type (see paragraphs [0126] and [0197]).

Regarding multicast addresses, these appear to be related to route entries. See, e.g., the following:

> [0173] When (and if) the NAP-B of a NAP receives an encapsulated non-ARP-route-request (via the NAP-PFL), the NAP processes the non-ARP-route-request just like any node would process a received non-ARP-route-request. Thus, the NAP forwards the non-ARP-route-request into the scatternet, unless it already has a route to the destination node, or unless the NAP itself is the destination node. In the latter case, the NAP can immediately return an encapsulated non-ARP-route-reply. Then the next hop node in the route entry for the source node is indicated as "another NAP." This indication may be just a general indication, or it may be a specific indication that includes a NAP **multicast address** or the specific source MAC address of the Ethernet packet that carried the received encapsulated ARP-route-request. The choice between general indication, NAP multicast address or source MAC address depends on whether broadcast packets, multicast packets or unicast packets are used to carry a corresponding encapsulated ARP-route-reply.

See also paragraphs [0156], [0186], and [0187] of Rune. There are additional references to "multicast" in Rune, but none of these references relate to comparing a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Applicant can find nowhere in Rune of disclosure or implication of a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, as recited generally in the independent claims. Applicant has already shown above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the **combination** of Rune and Jou does not teach or imply this subject matter.

For at least these reasons, the §103(a) rejections against claim 16 should be withdrawn.

2. Claims 18, 25

Claim 18 recites "A method as claimed in claim 16, wherein the destination address is an internet protocol address." Applicant has shown above that Applicant can find nowhere in Rune of disclosure or implication of a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, as recited generally in the independent claims. Applicant has already shown above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the **combination** of Rune and Jou does not teach or imply this subject matter.

Thus, claim 18 is patentable for at least these reasons. However, the Examiner points to paragraph 210 of Rune. This paragraph and the following paragraph state the following:

> [0210] As for ARP-route-requests, encapsulated ARP-route-requests, and ARP requests received by the address filtering function on either side of the NAP, if such a packet is addressed to the NAP itself, i.e., if its "target IP address" is the NAP's own IP address, the address filtering function passes the packet to the NAP-IPH. Otherwise, since such a packet does not contain a destination MAC address, the address filtering function in the NAP cannot use its address table in the way described above to find out on which side of the NAP the destination node is located. The destination MAC address of the Ethernet packet in which an encapsulated ARP-route-request is encapsulated does not apply in this situation, since that address is not the address of the destination node of the ARP-route-request. However, each of the ARP-route-request, encapsulated ARP-route-request, and ARP request contains a "target IP address," i.e., the IP address of the destination node. Thus, the address filtering function can utilize the ARP cache to find the MAC address of the destination node, provided that the target IP address is stored in the ARP cache. Once the destination MAC address is retrieved, the condition for passing the packet to the NAP-B is the same as described above for general unicast packets and unicast ARP

> replies, i.e., the packet will be passed to the NAP-B, unless the address table indicates that the destination node is located on the side of the NAP where the packet was received.
>
> [0211] If the destination MAC address cannot be retrieved, the address filtering function has no indication of where the destination node is located. In that case, it will simply pass the packet to the NAP-B.

What this section of Rune appears to indicate is that it is the **MAC address** that is used at least for filtering. By contrast, in claim 18 (in combination with claim 16), the destination address is an **internet protocol address** that is used for comparison purposes and for preventing the transmission of the packet or forwarding the packet. Therefore, the Examiner has not met a burden of creating a prima facie §103(a) argument that the combination of Rune and Jou discloses that the destination address (used for comparison purposes and for preventing the transmission of the packet or forwarding the packet) is an internet protocol address, and the §103(a) rejections against claim 18 should be withdrawn.

3. Claim 21

The Examiner rejected claim 21 under 103(a) being unpatentable over Rune in view of Jou. Applicant respectfully disagrees.

Claim 21 is reproduced below.

> A system comprising:
>
> a first device;
>
> a second device; and
>
> an intermediate node configured to arrange data transmission between the first device and the second device;
>
> wherein at least the second device is configured to multicast and/or broadcast packets to devices in the system, wherein the intermediate node is configured to check a destination address of a packet received from the second device, the intermediate node is configured to compare the destination address of the packet with at least one predetermined multicast and/or broadcast address, and wherein the intermediate node is configured

to prevent the transmission of the packet to the first device in response to the addresses matching, and wherein the intermediate node is configured to forward the packet to at least the first device in response to the addresses not matching.

The Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose at least the subject matter of the intermediate node is configured to compare the destination address of the packet with at least one predetermined multicast and/or broadcast address, and wherein the intermediate node is configured to prevent the transmission of the packet to the first device in response to the addresses matching.

The Examiner then points to Jou for alleged disclosure of this subject matter. However, Jou does not disclose this subject matter for at least the following reasons.

a) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): First Reason

The instant application has a priority date of 6 February 2004 under, e.g., M.P.E.P. §201.13, 35 U.S.C. §119 and 37 C.F.R. §1.55. That is, the priority date of 6 February 2004 is based on a Finnish application filed on that date, which later became an international (P.C.T.) application filed on 4 February 2005. The international application entered national stage in the United States on 10 October 2006 as the instant application. A proper claim for priority was made at least in the Declaration filed on 10 October 2006. In fact, the U.S. Patent Publication no. 2007/0127394 of the instant application lists

"Foreign Application Priority Data" as "Feb. 6, 2004", as shown by the following portion of the first page of this publication:

US 2007/0127394 A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0127394 A1**

Stirbu et al. (43) **Pub. Date: Jun. 7, 2007**

(54) **METHOD AND SYSTEM FOR OPTIMIZATION OF DATA TRANSFER BETWEEN NETWORKED DEVICES**

(75) Inventors: **Vlad Stirbu**, Tampere (FI); **Mika Saaranen**, Tampere (FI)

Correspondence Address:
SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182 (US)

(73) Assignee: **Nokia Corporation**

(21) Appl. No.: **10/587,979**

(22) PCT Filed: **Feb. 4, 2005**

(86) PCT No.: **PCT/FI05/00077**

§ 371(c)(1),
(2), (4) Date: **Oct. 10, 2006**

(30) **Foreign Application Priority Data**

Feb. 6, 2004 (FI) 20040179

Publication Classification

(51) **Int. Cl.**
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)

(52) **U.S. Cl.** **370/254**; 370/389

(57) **ABSTRACT**

The invention relates to a method of arranging communication in a local area networking system comprising a first device, a second device and an intermediate node for arranging data transmission between the first device and the second device. The second device is arranged to multicast and/or broadcast messages to devices in the system. The transmission of multicast and/or broadcast messages to the first device is prevented by the interworking means.

Therefore, the priority date of the instant invention is 6 February 2004.

Turning to Jou, the published application 2005/0036489 was filed on 10 August 2004, after the priority date of 6 February 2004 of the instant application. Jou's published application claims priority from provisional application 60/495,186, a copy of which is enclosed herein in section (9), "Evidence Appendix". This copy was also submitted in the after-final amendment dated 4 August 2011 (as Appendix A). The Jou provisional application was filed on 15 August 2003. Therefore, for material to be cited under 35 U.S.C. §102 (and therefore §103) against the instant application, that material must exist prior to the priority date of the instant application of 6 February 2004.

The Examiner cites to paragraph 29 of Jou's published application, which states the following:

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. The wireless transport device will determine

> whether or not the DA filed is the same as the local MAC address of this device (510). If positive, the wireless transport device drops the frame because it is an echoed frame (step 530). Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

The Examiner relies on this section of Jou's published application in order to assert that Jou's published application discloses the subject matter of "compare **the destination address** of the packet with at least one predetermined multicast and/or broadcast address":

> response to the address not matching. However, Jou teaches comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching **[see paragraph 0029 where a wireless transport device (intermediate node) receives a broadcast frame; the wireless transport device determines whether or not the Destination Address field is the same as the local MAC address (predetermined multicast address) of this device; if positive (in response the addresses matching), the wireless transport device drops the frame]**. It would have been obvious for a person having ordinary skill in the art to

Final Office Action, dated 24 May 2011. That is, the Examiner is relying on the statement "The wireless transport device will determine whether or not the DA [destination address] filed (sic – should be "field") is the same as the local MAC address of this device (510)" in paragraph 29 of Jou's published application in order for Jou's published application to disclose the subject matter in the instant claims of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address".

However, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding a destination address field therefore has the

filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding a destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102.

Consequently, the sections cited by the Examiner of Jou's published application cannot be cited as prior art against the claims of the instant application. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

Applicant made similar arguments in the after-final Amendment dated 4 August 2011. In response, the Examiner in the Advisory Action dated 12 September 2011 stated the following:

> In response to applicant's argument that the Jou reference is not valid because the provisional application does not contain the cited paragraph (see applicant's remarks page 9-10), it should be noted that Jou's provisional application still have support for said paragraph (See second paragraph under 'summary of the invention' in page 3 where Jou teaches "When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize (compare and determine) it should drop the frames without processing")

Advisory Action dated 12 September 2011, page 2. What Jou's provisional application states is the following:

> 4. The method for a transport device when relays a broadcast frame, to add the address information of the previous hop from where the frame comes into the transmitted frame.
>
> 5. The method according to claim 4, wherein:
>
> When a wireless transport device receives a broadcast frame whose "previous hop" field contains its own address, the device can drop the frame without any further processing.
>
> For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realized it should drop the frames without processing.

Jou's provisional application, page 1. See also:

> To filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame so once the previous hop receives the frames, it can ignore these echo frames without further processing. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize it should drop the frames without processing.

Jou's provisional application, page 3.

Regardless, Jou's provisional application does not state or imply that the "previous hop" field **is a destination address field** (in fact, Applicant cannot find the term "destination address" used anywhere in Jou's provisional application). This is important because the Examiner is using Jou to allegedly disclose the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address". Jou's provisional application simply does not disclose anything related to a destination address field or its use. Furthermore, the "previous hop" field disclosed in Jou's provisional application certainly does **not** contain a "destination address", as this field contains instead "address information of the previous hop from where the frame comes". See page 1, claim 4 (and claim 5) of Jou's provisional application.

As stated above, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding the destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding the destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

b) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): Second Reason

Even if the cited sections of Jou's published application are prior art against the instant independent claims, Applicant respectfully submits that Jou's published application does not disclose the subject matter the Examiner asserts is disclosed by Jou's published application. For instance, the Examiner cites to paragraph 29 of Jou's published application (emphasis added):

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. **The wireless transport device will determine whether or not the DA filed (sic – should be "field") is the same as the local MAC address of this device (510).** ***If positive, the wireless transport device drops the frame because it is an echoed frame (step 530).*** Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the

> route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

This section of Jou's published application indicates that a determination is made of whether or not the DA (destination address) is the same as the local MAC (media access control) address of the device. It is known in the art that a MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment. What the sentence "If positive, the wireless transport device drops the frame because it is an echoed frame (step 530)" appears to mean is that the current device previously transmitted the frame, and the frame is being echoed back to the device. Thus, the device put the MAC address of itself into the frame, and transmitted the frame. When the device receives a frame that has its MAC address, the device then determines the frame is an echoed frame and can be ignored. See also paragraph 22 of Jou's published application (emphasis added):

> [0022] Depending on the method in unicast routing path calculation, the forwarding table for unicast frames can be used as the table that is used to look up the incoming neighboring device for a broadcast frame originator (i.e. FIG. 2). In this case, there is no extra effort in generating the broadcast frame reduction table. The other method to reduce the resource spending on broadcast frames is to reduce the processing effort for echoed broadcast frames. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, most likely device X will receive both the frames. Using the method mentioned earlier can cause the frames being dropped eventually. However, a table lookup for each frame will be needed for device X. To relieve the processing load, N1 and N2 can both add the address of X inside the frame. When X receives a broadcast frame, it can check whether the frame is echoed from itself. If so, the frame can be dropped immediately without processing. **Therefore, to filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame.** This can be achieved by using an unused field in the 802.11 MAC header. In broadcasting, the Address 3 (DA, destination address) of FIG. 3 is not used. The "previous hop" information is carried in the location the Address 3 (DA, destination address).

Moreover, the MAC address of the device is not a "broadcast address", as the MAC address is the address of the device itself: "The wireless transport device will determine whether or not the DA filed (sic – should be "field") **is the same as the local MAC address of this device** (510)." Paragraph 29 of Jou's published application. See also paragraph 22 of Jou's published application: "Therefore, to filter out echo frames, broadcast frames have to carry the address information of [the] **previous hop** in the transmitted frame." Another device receiving the frame with the MAC address of the previous hop is not going to determine the MAC address is a broadcast address or use the MAC address as a broadcast address. This means that the MAC address of a device will not be the same as the broadcast address. The same is true for a multicast address: a multicast address will not be the same as a MAC address. This is true because, by definition, the multicast address is to be used for communication with multiple addresses/devices, while a MAC address is made to be specific to a single device.

To put this a different way, any device receiving a packet with a destination address that is the same as a MAC address of one of the devices on a network should forward the packet toward the device having that MAC address. However, there is only one device in the network with that MAC address. Therefore, the MAC address is not a broadcast address (a packet addressed with a broadcast address is destined for every device in the network) or is not a multicast address (a packet addressed with a multicast address is destined for at least two devices in the network).

In the Advisory Action dated 12 September 2011, the Examiner states the following:

'multicast/broadcast and destination address). The recitations broadcast/multicast address and multicast address are not defined by the claim; the specification does not provide a clear explanation of said terms. In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art [MPEP 2111.01]. In this case Jou's destination address (although MAC address of the previous hop) is considered a multicast address since it is a multicast destination address (as shown above and discussed in paragraph 0022-Jou). Applicant's arguments do not show how the claims prevent a reasonable broadest interpretation of said terms would prevent such interpretation as supported by the Jou reference.

Advisory Action dated 12 September 2011, page 2.

One skilled in the art knows what the terms "MAC address", "multicast address", and "broadcast address" are. See, e.g., http://en.wikipedia.org/wiki/MAC_address ("MAC address"), http://en.wikipedia.org/wiki/Multicast_address ("multicast address"), and http://en.wikipedia.org/wiki/Broadcast_address ("broadcast address"). In fact, it is known that a broadcast address in MAC (e.g., 802.11) is all ones, e.g., FFFFFFFF for 32 bits in hexadecimal. See paragraph 27 of Jou ("a broadcast frame in WITnet is a WDS frame with Receiver Address Field (please refer to FIG. 3) being, for instant (sic), 0xffffffffffff"), or http://en.wikipedia.org/wiki/MAC_address ("Packets sent to the broadcast address, all one bits, are received by all stations on a local area network. In hexadecimal the broadcast address would be FF:FF:FF:FF:FF:FF"). Jou is using the broadcast address of 0xffffffffffff consistently with what is known in the art for one particular network and protocol.

Additionally, even the term "destination address" is respectfully being read by the Examiner in a manner not consistent with the way one skilled in the art would read the term. Applicant's claim recites (in general) comparing the destination address of the packet with at least one multicast and/or broadcast address. In Jou's published application, a value in a destination address **field** is compared with a MAC address of the device receiving the packet. (See paragraph 29 of Jou's published application.) What is in the destination address **field** is not a "destination address" as this term is commonly used in the art. Instead, it is the MAC address of the previous hop. See the last sentence of paragraph 22 and paragraph 29 of Jou's published application. In fact, the actual "destination address" of the packet in Jou's published application appears to be in the

Receiver Address Field and has a value of 0xffffffffffff. See paragraph 27 of Jou. Thus, even the term "destination address" is being read by the Examiner in a way that is not the way one skilled in the art would read this term.

Therefore, Applicant respectfully submits that it is the Examiner who is interpreting the terms "multicast address" and "broadcast address" in a way that is not in accord with the way these terms would be interpreted by one skilled in the art. That is, one skilled in the art would not interpret MAC, broadcast, and multicast addresses in the way the Examiner is interpreting these terms in order to get Jou to read on the instant independent claims.

Thus, for at least the above reasons, Jou's published application does not disclose at least the subject matter of "compare the destination address of the packet with at least one predetermined multicast and/or broadcast address", as recited in claim 21 and generally in the other independent claims.

Because the Examiner admits that Rune does not disclose the subject matter in the claims of "compare the destination address of the packet with at least one predetermined multicast and/or broadcast address", and because Jou's published application does not disclose this certain subject matter, the combination of Rune and Jou does not disclose this subject matter. Applicant respectfully submits the 103(a) rejections against the independent claims must fail.

c) The combination of Rune and Jou

The Applicant has stated above that the combination of Rune and Jou does not disclose all features of the independent claims, including claim 21. For instance, the Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose this subject matter. The Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the combination of Rune and Jou does not teach or imply this subject matter.

Nonetheless, the Examiner states the following in the Advisory Action dated 12 September 2011:

> Examiner respectfully disagrees with applicant's assertion that Rune does not teach "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" and "preventing the transmission of the packet to a first device in reponse to the addresss matching" (see applicant's remarks pages 13-16). This asscrtion amounts to attacking the reference idividually. The office action relied upon the Jou reference for teaching "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" (specially the step of 'comparing', 'destination address' and 'multicast address' are disclosed by the Jou reference). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, examiner respectfully disagrees with applicant's statements that seem to imply that filtering is done (only?) by filtering out packets by type and not address. In contrast, even though Rune teaches filtering out by type, Rune also teaches filtering out by address (see paragraph 0215). Therefore, one having ordinary skill in the art would take Rune (for teaching filtering out broadcast packets by address, and use Jou to learn how to filter by address (i.e. comparing the destination address of the packet with multicast address).

Applicant respectfully submits that Applicant has stated multiple times that the combination of Rune and Jou does not disclosed the features of the independent claims, as the Examiner admits that Rune does not disclose this subject matter and the Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. If the Examiner admits that Rune does not disclose certain subject matter and Applicant shows that some or all of that subject matter is not disclosed or implied by Jou, then the combination of Rune and Jou **cannot** disclose or imply that subject matter.

For sake of argument, however, Applicant will now show that even though the Examiner has admitted that Rune does not disclose "compare the destination address of the packet with at least one predetermined multicast and/or broadcast address", and "prevent the transmission of the packet to a first device in response to the addresses matching", Applicant will now show the same.

Applicant cannot find in Rune where a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

There are a number of indications that can include multicast addresses in Rune. See, e.g., paragraphs 156, 173, 186, and 187 of Rune. However, nowhere in these paragraphs (or any other paragraphs) of Rune can Applicant find a comparison that is performed between a multicast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Regarding broadcast addresses, Rune makes specific reference to these addresses in paragraphs 215 and 291, neither of which involves a comparison using a destination address and a broadcast address.

Rune does discuss packet filtering. See paragraphs 195-218 of Rune. If this packet filtering is in any way related to a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, Applicant cannot find in Rune where that is the case. In fact, Rune states the following (emphasis added):

> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. The NAL packet type filtering, in some embodiments of the invention, is very simple: **all NAPSA broadcast type**

> **and scatternet broadcast type packets are passed by the packet type filtering function 912 to the NAP-IPH**, while all other packet types are passed to the address filtering function 914.

This section of Rune appears to teach away from comparing a broadcast address and a destination address, as all broadcast type packets are simply forwarded.

In paragraph 215, Rune states the following (emphasis added):

> [0215] For broadcast ARP replies received from the LAN, the address filtering process is much more complicated. The address filtering function first extracts the "target MAC address" from the ARP reply. This is the MAC address of the intended receiver of the ARP reply. In other words, this is the MAC address of the node that sent the ARP request (or possibly the ARP-route-request) that triggered the ARP reply. **The target MAC address is extracted even though the destination address of the packet is a broadcast address. The target MAC address is then made subject to the same check as a destination address of a unicast packet.** If the target MAC address was not found in the address table or if it was found in the address table and the address table indicated that the corresponding node is located on the scatternet side of the NAP, the packet is passed to the NAP-B. **The address filtering function then has an option to convert the broadcast ARP reply into a unicast ARP reply by replacing the broadcast address with the target MAC address in the destination address field.** The purpose of this option is to save resources (mainly bandwidth) in the scatternet.

None of the highlighted (or any other portion) of this cited text indicates in any way that a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

What Rune states regarding broadcast types is the following (emphasis added)

> [0123] FIGS. 10-15 illustrate the coverage areas of the different broadcast types. The NAPSA broadcast type, as the name implies, is used to broadcast packets to a single NAPSA. This is illustrated in FIG. 10 (which is similar to FIG. 8), where each isolated gray area 1000-1008 represents a different NAPSA broadcast area. **A NAPSA broadcast packet is not allowed to leave its broadcast area.** Thus, NAPSA broadcast packets are not forwarded to the LAN and are not allowed to cross a NAPSA border.

[0124] The scatternet broadcast type, as the name implies, is used to broadcast packets within the scatternet. This arrangement is illustrated in FIG. 11, where each contiguous gray area 1100-1106 represents different broadcast areas for a scatternet broadcast packet. **Such broadcast packets are not forwarded to the LAN.** When more than one AD exists in a scatternet, the scatternet broadcast packets carrying higher layer protocol packets, i.e. packets from protocol layers above the NAL, e.g. IP, are not allowed to cross an AD border. These packets are consequently limited to a part of the scatternet belonging to the same AD. Scatternet broadcast packets that are not carrying packets from higher layer protocols, such as NAL control packets, however, are allowed to cross AD borders and may therefore still be broadcast in the whole scatternet. A NAL control packet does not encapsulate data from a higher protocol layer and is only used to transfer signaling and control information between NAL entities in different Bluetooth nodes. This arrangement is illustrated in FIG. 12, where each contiguous gray area 1200 and 1202 represents the broadcast area of an NAL control packet.

[0125] The AD broadcast type covers the LAN and any attached scatternets that are associated with the same AD as the LAN. These broadcast packets are forwarded by NAPs from/to the LAN to/from the scatternet, but the NAPSA borders in the scatternet are respected. This arrangement is illustrated in FIG. 13, where each contiguous gray area 1300-1304 represents the broadcast area of an AD broadcast packet. An AD broadcast packet is used to reach all the nodes in the AD (including the nodes on the LAN). All broadcast packets that are forwarded from the LAN to the scatternet are sent using the AD broadcast type.

[0126] The scatternet-AD broadcast type is a special broadcast type used only for route requests. This broadcast type is, as the name implies, a combination of the scatternet broadcast type and the AD broadcast type. The scatternet-AD broadcast packets are distributed through the entire scatternet without respecting the NAPSA borders, as well as the entire AD via the NAPs. However, the NAPSA borders are respected after a scatternet-AD broadcast packet re-enters the scatternet via a NAP.

Thus, in Rune, the NAPSA broadcast packets are not forward to a scatternet, and the scatternet broadcast packets are not forwarded to the LAN. However, these packets are not forwarded based on their broadcast type, which is defined by an indicator in a NAL (network adaptive layer) header (emphasis added):

[0122] In addition to the routing protocol discussed above, the NAL also has a broadcast mechanism. (Note that broadcasting on the LAN is inherent in the shared medium and no "broadcast" mechanism is needed.) In accordance with embodiments of the invention, the NAL includes four different types of broadcasts: NAPSA broadcast, scatternet broadcast, AD broadcast, and scatternet-AD broadcast. The differences

> between broadcast types lie in the scope of the distribution and how the NAPs and other nodes at the NAPSA borders treat the different broadcast packets. **Note that the broadcast type is defined by an indicator in the NAL header.** In that sense, these different broadcast types can only exist in the scatternet. On the other hand, an Ethernet broadcast packet (originated on the LAN) that is forwarded from the LAN to the scatternet becomes an AD broadcast packet when it is forwarded into the scatternet. The broadcast type may be indicated in the NAL header, for example, with a two-bit indicator, as indicated in Table 2.

Thus, the broadcast type is defined in Rune by an indicator in the NAL header.

It is clear that filtering of broadcast packets in Rune is performed without examination of destination addresses for packets (emphasis added):

> [0196] The second main component of the invention is the packet filtering mechanism. As already mentioned, a NAP does not indiscriminately forward packets. Instead, it uses the packet filtering mechanisms (see FIG. 9) to reduce the number of unnecessarily forwarded packets. For example, forwarding is unnecessary when both the source and the destination node are located on the same side of the NAP. Furthermore, NAL broadcast packets of the NAPSA broadcast type and the scatternet broadcast type are always blocked by the packet filtering mechanisms. **Only those packets that pass the packet filtering mechanisms are forwarded to the scatternet.** The generated useless traffic is a waste of resources, especially so in the scatternet where radio resources and processing resources are scarce. Furthermore, this could lead to the scatternet being flooded by traffic from the LAN with its shared medium and much higher capacity. Therefore, a packet filtering mechanism is needed in order to limit the forwarding of unnecessary traffic. The packet filtering is based on the destination address and the NAL packet type. Filtering may also be based on higher layer protocols.
>
> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. **The NAL packet type filtering**, in some embodiments of the invention, **is very simple: all *NAPSA broadcast type and scatternet broadcast type packets* are passed by the packet type filtering function 912 to the NAP-IPH, while *all other packet types* are passed to the address filtering function 914.**

Thus, packets having the NAPSA broadcast and scatternet broadcast ***types*** are filtered, and **all other packet *types*** are passed to an address filtering function, for forwarding to the correct address. See also, e.g., paragraphs [0222], [0224], [0237] of Rune.

As is noted in paragraphs [0125] and [0197] from Rune above, packets having the AD broadcast type are forwarded, as are packets having the scatternet-AD broadcast type (see paragraphs [0126] and [0197]).

Regarding multicast addresses, these appear to be related to route entries. See, e.g., the following:

> [0173] When (and if) the NAP-B of a NAP receives an encapsulated non-ARP-route-request (via the NAP-PFL), the NAP processes the non-ARP-route-request just like any node would process a received non-ARP-route-request. Thus, the NAP forwards the non-ARP-route-request into the scatternet, unless it already has a route to the destination node, or unless the NAP itself is the destination node. In the latter case, the NAP can immediately return an encapsulated non-ARP-route-reply. Then the next hop node in the route entry for the source node is indicated as "another NAP." This indication may be just a general indication, or it may be a specific indication that includes a NAP **multicast address** or the specific source MAC address of the Ethernet packet that carried the received encapsulated ARP-route-request. The choice between general indication, NAP multicast address or source MAC address depends on whether broadcast packets, multicast packets or unicast packets are used to carry a corresponding encapsulated ARP-route-reply.

See also paragraphs [0156], [0186], and [0187] of Rune. There are additional references to "multicast" in Rune, but none of these references relate to comparing a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Applicant can find nowhere in Rune of disclosure or implication of a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, as recited generally in the independent claims. Applicant has already shown above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the **combination** of Rune and Jou does not teach or imply this subject matter.

For at least these reasons, the §103(a) rejections against claim 21 should be withdrawn.

4. Claims 22, 23, 24, 28

The Examiner rejected claim 22 under 103(a) being unpatentable over Rune in view of Jou. Applicant respectfully disagrees.

Claim 22 is reproduced below.

> An apparatus comprising:
>
> a processor configured to
>
> check a destination address of a received packet, ;
>
> compare the destination address of the packet with at least one predetermined multicast and/or broadcast address;
>
> prevent the transmission of the packet to a first device in response to the addresses matching; and
>
> forward the packet to at least the first device in response to the addresses not matching.

The Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose at least the subject matter of comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address and preventing the transmission of the packet to a first device in response to the addresses matching.

The Examiner then points to Jou for alleged disclosure of this subject matter. However, Jou does not disclose this subject matter for at least the following reasons.

a) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): First Reason

The instant application has a priority date of 6 February 2004 under, e.g., M.P.E.P. §201.13, 35 U.S.C. §119 and 37 C.F.R. §1.55. That is, the priority date of 6 February 2004 is based on a Finnish application filed on that date, which later became an international (P.C.T.) application filed on 4 February 2005. The international application entered national stage in the United States on 10 October 2006 as the instant application. A proper claim for priority was made at least in the Declaration filed on 10 October 2006. In fact, the U.S. Patent Publication no. 2007/0127394 of the instant application lists "Foreign Application Priority Data" as "Feb. 6, 2004", as shown by the following portion of the first page of this publication:

US 2007/0127394 A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0127394 A1**

Stirbu et al. (43) **Pub. Date: Jun. 7, 2007**

(54) METHOD AND SYSTEM FOR OPTIMIZATION OF DATA TRANSFER BETWEEN NETWORKED DEVICES

(75) Inventors: Vlad Stirbu, Tampere (FI); Mika Saaranen, Tampere (FI)

Correspondence Address:
SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182 (US)

(73) Assignee: Nokia Corporation

(21) Appl. No.: 10/587,979

(22) PCT Filed: Feb. 4, 2005

(86) PCT No.: PCT/FI05/00077

§ 371(c)(1),
(2), (4) Date: Oct. 10, 2006

(30) Foreign Application Priority Data

Feb. 6, 2004 (FI) 20040179

Publication Classification

(51) Int. Cl.
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)

(52) U.S. Cl. 370/254; 370/389

(57) ABSTRACT

The invention relates to a method of arranging communication in a local area networking system comprising a first device, a second device and an intermediate node for arranging data transmission between the first device and the second device. The second device is arranged to multicast and/or broadcast messages to devices in the system. The transmission of multicast and/or broadcast messages to the first device is prevented by the interworking means.

Therefore, the priority date of the instant invention is 6 February 2004.

Turning to Jou, the published application 2005/0036489 was filed on 10 August 2004, after the priority date of 6 February 2004 of the instant application. Jou's published application claims priority from provisional application 60/495,186, a copy of which is enclosed herein in section (9), "Evidence Appendix". This copy was also submitted in the after-final amendment dated 4 August 2011 (as Appendix A). The Jou provisional application was filed on 15 August 2003. Therefore, for material to be cited under 35 U.S.C. §102 (and therefore §103) against the instant application, that material must exist prior to the priority date of the instant application of 6 February 2004.

The Examiner cites to paragraph 29 of Jou's published application, which states the following:

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. The wireless transport device will determine whether or not the DA filed is the same as the local MAC address of this device (510). If positive, the wireless transport device drops the frame because it is an echoed frame (step 530). Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

The Examiner relies on this section of Jou's published application in order to assert that Jou's published application discloses the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address":

> response to the address not matching. However, Jou teaches comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching [see paragraph 0029 where a wireless transport device (intermediate node) receives a broadcast frame; the wireless transport device determines whether or not the Destination Address field is the same as the local MAC address (predetermined multicast address) of this device; if positive (in response the addresses matching), the wireless transport device drops the frame]. It would have been obvious for a person having ordinary skill in the art to

Final Office Action, dated 24 May 2011. That is, the Examiner is relying on the statement "The wireless transport device will determine whether or not the DA [destination address] filed (sic – should be "field") is the same as the local MAC address of this device (510)" in paragraph 29 of Jou's published application in order for Jou's published application to disclose the subject matter in the instant claims of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address".

However, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding a destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding a destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102.

Consequently, the sections cited by the Examiner of Jou's published application cannot be cited as prior art against the claims of the instant application. Because the Examiner admits that Rune does not disclose certain subject matter from the

claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

Applicant made similar arguments in the after-final Amendment dated 4 August 2011. In response, the Examiner in the Advisory Action dated 12 September 2011 stated the following:

> In response to applicant's argument that the Jou reference is not valid because the provisional application does not contain the cited paragraph (see applicant's remarks page 9-10), it should be noted that Jou's provisional application still have support for said paragraph (See second paragraph under 'summary of the invention' in page 3 where Jou teaches "When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize (compare and determine) it should drop the frames without processing")

Advisory Action dated 12 September 2011, page 2. What Jou's provisional application states is the following:

> 4. The method for a transport device when relays a broadcast frame, to add the address information of the previous hop from where the frame comes into the transmitted frame.
>
> 5. The method according to claim 4, wherein:
>
> When a wireless transport device receives a broadcast frame whose "previous hop" field contains its own address, the device can drop the frame without any further processing.
>
> For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realized it should drop the frames without processing.

Jou's provisional application, page 1. See also:

> To filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame so once the previous hop receives the frames, it can ignore these echo frames without further processing. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize it should drop the frames without processing.

Jou's provisional application, page 3.

Regardless, Jou's provisional application does not state or imply that the "previous hop" field **is a destination address field** (in fact, Applicant cannot find the term "destination address" used anywhere in Jou's provisional application). This is important because the Examiner is using Jou to allegedly disclose the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address". Jou's provisional application simply does not disclose anything related to a destination address field or its use. Furthermore, the "previous hop" field disclosed in Jou's provisional application certainly does **not** contain a "destination address", as this field contains instead "address information of the previous hop from where the frame comes". See page 1, claim 4 (and claim 5) of Jou's provisional application.

As stated above, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding the destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding the destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

b) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): Second Reason

Even if the cited sections of Jou's published application are prior art against the instant independent claims, Applicant respectfully submits that Jou's published application does not disclose the subject matter the Examiner asserts is disclosed by Jou's published application. For instance, the Examiner cites to paragraph 29 of Jou's published application (emphasis added):

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. **The wireless transport device will determine whether or not the DA filed (sic – should be "field") is the same as the local MAC address of this device (510).** ***If positive, the wireless transport device drops the frame because it is an echoed frame (step 530).*** Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

This section of Jou's published application indicates that a determination is made of whether or not the DA (destination address) is the same as the local MAC (media access control) address of the device. It is known in the art that a MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment. What the sentence "If positive, the wireless transport device drops the frame because it is an echoed frame (step 530)" appears to mean is that the current device previously transmitted the frame, and the frame is being echoed back to the device. Thus, the device put the MAC address of itself into the frame, and transmitted the frame. When the device receives a frame that has its MAC address, the device then determines the frame is an echoed frame and can be ignored. See also paragraph 22 of Jou's published application (emphasis added):

> [0022] Depending on the method in unicast routing path calculation, the forwarding table for unicast frames can be used as the table that is used to look up the incoming neighboring device for a broadcast frame originator (i.e. FIG. 2). In this case, there is no extra effort in generating the broadcast frame reduction table. The other method to reduce the resource spending on broadcast frames is to reduce the processing effort for echoed broadcast frames. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, most likely device X will receive both the frames. Using the method mentioned earlier can cause the frames being dropped eventually. However, a table lookup for each frame will be needed for device X. To relieve the processing load, N1 and N2 can both add the address of X inside the frame. When X receives a broadcast frame, it can check whether the frame is echoed from itself. If so, the frame can be dropped immediately without processing. **Therefore, to filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame.** This can be achieved by using an unused field in the 802.11 MAC header. In broadcasting, the Address 3 (DA, destination address) of FIG. 3 is not used. The "previous hop" information is carried in the location the Address 3 (DA, destination address).

Moreover, the MAC address of the device is not a "broadcast address", as the MAC address is the address of the device itself: "The wireless transport device will determine whether or not the DA filed (sic – should be "field") **is the same as the local MAC address of this device** (510)." Paragraph 29 of Jou's published application. See also paragraph 22 of Jou's published application: "Therefore, to filter out echo frames, broadcast frames have to carry the address information of [the] **previous hop** in the transmitted frame." Another device receiving the frame with the MAC address of the previous hop is not going to determine the MAC address is a broadcast address or use the MAC address as a broadcast address. This means that the MAC address of a device will not be the same as the broadcast address. The same is true for a multicast address: a multicast address will not be the same as a MAC address. This is true because, by definition, the multicast address is to be used for communication with multiple addresses/devices, while a MAC address is made to be specific to a single device.

To put this a different way, any device receiving a packet with a destination address that is the same as a MAC address of one of the devices on a network should forward the packet toward the device having that MAC address. However, there is only one device in the network with that MAC address. Therefore, the MAC address is not a broadcast address (a packet addressed with a broadcast address is destined for every device in the network) or is not a multicast address (a packet addressed with a multicast address is destined for at least two devices in the network).

In the Advisory Action dated 12 September 2011, the Examiner states the following:

> 'multicast/broadcast and destination address). The recitations broadcast/multicast address and multicast address are not defined by the claim; the specification does not provide a clear explanation of said terms. In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art [MPEP 2111.01]. In this case Jou's destination address (although MAC address of the previous hop) is considered a multicast address since it is a multicast destination address (as shown above and discussed in paragraph 0022-Jou). Applicant's arguments do not show how the claims prevent a reasonable broadest interpretation of said terms would prevent such interpretation as supported by the Jou reference.

Advisory Action dated 12 September 2011, page 2.

One skilled in the art knows what the terms "MAC address", "multicast address", and "broadcast address" are. See, e.g., http://en.wikipedia.org/wiki/MAC_address ("MAC address"), http://en.wikipedia.org/wiki/Multicast_address ("multicast address"), and http://en.wikipedia.org/wiki/Broadcast_address ("broadcast address"). In fact, it is known that a broadcast address in MAC (e.g., 802.11) is all ones, e.g., FFFFFFFF for 32 bits in hexadecimal. See paragraph 27 of Jou ("a broadcast frame in WITnet is a WDS frame with Receiver Address Field (please refer to FIG. 3) being, for instant (sic), 0xffffffffffff"), or http://en.wikipedia.org/wiki/MAC_address ("Packets sent to the broadcast address, all one bits, are received by all stations on a local area network. In hexadecimal the broadcast address would be FF:FF:FF:FF:FF:FF"). Jou is using the

broadcast address of 0xffffffffffff consistently with what is known in the art for one particular network and protocol.

Additionally, even the term "destination address" is respectfully being read by the Examiner in a manner not consistent with the way one skilled in the art would read the term. Applicant's claim recites (in general) comparing the destination address of the packet with at least one multicast and/or broadcast address. In Jou's published application, a value in a destination address **field** is compared with a MAC address of the device receiving the packet. (See paragraph 29 of Jou's published application.) What is in the destination address **field** is not a "destination address" as this term is commonly used in the art. Instead, it is the MAC address of the previous hop. See the last sentence of paragraph 22 and paragraph 29 of Jou's published application. In fact, the actual "destination address" of the packet in Jou's published application appears to be in the Receiver Address Field and has a value of 0xffffffffffff. See paragraph 27 of Jou. Thus, even the term "destination address" is being read by the Examiner in a way that is not the way one skilled in the art would read this term.

Therefore, Applicant respectfully submits that it is the Examiner who is interpreting the terms "multicast address" and "broadcast address" in a way that is not in accord with the way these terms would be interpreted by one skilled in the art. That is, one skilled in the art would not interpret MAC, broadcast, and multicast addresses in the way the Examiner is interpreting these terms in order to get Jou to read on the instant independent claims.

Thus, for at least the above reasons, Jou's published application does not disclose at least the subject matter of "comparing the destination address of the packet

with at least one predetermined multicast and/or broadcast address", as recited in claim 22 and generally in the other independent claims.

Because the Examiner admits that Rune does not disclose the subject matter in the claims of "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and because Jou's published application does not disclose this certain subject matter, the combination of Rune and Jou does not disclose this subject matter. Applicant respectfully submits the 103(a) rejections against the independent claims must fail.

c) The combination of Rune and Jou

The Applicant has stated above that the combination of Rune and Jou does not disclose all features of the independent claims, including claim 22. For instance, the Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose this subject matter. The Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the combination of Rune and Jou does not teach or imply this subject matter.

Nonetheless, the Examiner states the following in the Advisory Action dated 12 September 2011:

Examiner respectfully disagrees with applicant's assertion that Rune does not teach "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" and "preventing the transmission of the packet to a first device in reponse to the addresss matching" (see applicant's remarks pages 13-16). This assertion amounts to attacking the reference idividually. The office action relied upon the Jou reference for teaching "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" (specially the step of 'comparing', 'destination address' and 'multicast address' are disclosed by the Jou reference). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, examiner respectfully disagrees with applicant's statements that seem to imply that filtering is done (only?) by filtering out packets by type and not address. In contrast, even though Rune teaches filtering out by type, Rune also teaches filtering out by address (see paragraph 0215). Therefore, one having ordinary skill in the art would take Rune (for teaching filtering out broadcast packets by address, and use Jou to learn how to filter by address (i.e. comparing the destination address of the packet with multicast address).

Applicant respectfully submits that Applicant has stated multiple times that the combination of Rune and Jou does not disclosed the features of the independent claims, as the Examiner admits that Rune does not disclose this subject matter and the Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. If the Examiner admits that Rune does not disclose certain subject matter and Applicant shows that some or all of that subject matter is not disclosed or implied by Jou, then the combination of Rune and Jou **cannot** disclose or imply that subject matter.

For sake of argument, however, Applicant will now show that even though the Examiner has admitted that Rune does not disclose "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and "preventing the transmission of the packet to a first device in response to the addresses matching", Applicant will now show the same.

Applicant cannot find in Rune where a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

There are a number of indications that can include multicast addresses in Rune. See, e.g., paragraphs 156, 173, 186, and 187 of Rune. However, nowhere in these paragraphs (or any other paragraphs) of Rune can Applicant find a comparison that is

performed between a multicast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Regarding broadcast addresses, Rune makes specific reference to these addresses in paragraphs 215 and 291, neither of which involves a comparison using a destination address and a broadcast address.

Rune does discuss packet filtering. See paragraphs 195-218 of Rune. If this packet filtering is in any way related to a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, Applicant cannot find in Rune where that is the case. In fact, Rune states the following (emphasis added):

> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. The NAL packet type filtering, in some embodiments of the invention, is very simple: **all NAPSA broadcast type and scatternet broadcast type packets are passed by the packet type filtering function 912 to the NAP-IPH**, while all other packet types are passed to the address filtering function 914.

This section of Rune appears to teach away from comparing a broadcast address and a destination address, as all broadcast type packets are simply forwarded.

In paragraph 215, Rune states the following (emphasis added):

> [0215] For broadcast ARP replies received from the LAN, the address filtering process is much more complicated. The address filtering function first extracts the "target MAC address" from the ARP reply. This is the MAC address of the intended receiver of the ARP reply. In other words, this is the MAC address of the node that sent the ARP request (or possibly the ARP-route-request) that triggered the ARP reply. **The target MAC address is extracted even though the destination address of the packet is a broadcast address. The target MAC address is then made subject to the same check as a destination address of a unicast packet.** If the target MAC address was not found in the address table or if it was found in the address table and the address table indicated that the corresponding node is located on the scatternet side of the NAP, the

> packet is passed to the NAP-B. **The address filtering function then has an option to convert the broadcast ARP reply into a unicast ARP reply by replacing the broadcast address with the target MAC address in the destination address field.** The purpose of this option is to save resources (mainly bandwidth) in the scatternet.

None of the highlighted (or any other portion) of this cited text indicates in any way that a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

What Rune states regarding broadcast types is the following (emphasis added)

> [0123] FIGS. 10-15 illustrate the coverage areas of the different broadcast types. The NAPSA broadcast type, as the name implies, is used to broadcast packets to a single NAPSA. This is illustrated in FIG. 10 (which is similar to FIG. 8), where each isolated gray area 1000-1008 represents a different NAPSA broadcast area. **A NAPSA broadcast packet is not allowed to leave its broadcast area.** Thus, NAPSA broadcast packets are not forwarded to the LAN and are not allowed to cross a NAPSA border.
>
> [0124] The scatternet broadcast type, as the name implies, is used to broadcast packets within the scatternet. This arrangement is illustrated in FIG. 11, where each contiguous gray area 1100-1106 represents different broadcast areas for a scatternet broadcast packet. **Such broadcast packets are not forwarded to the LAN.** When more than one AD exists in a scatternet, the scatternet broadcast packets carrying higher layer protocol packets, i.e. packets from protocol layers above the NAL, e.g. IP, are not allowed to cross an AD border. These packets are consequently limited to a part of the scatternet belonging to the same AD. Scatternet broadcast packets that are not carrying packets from higher layer protocols, such as NAL control packets, however, are allowed to cross AD borders and may therefore still be broadcast in the whole scatternet. A NAL control packet does not encapsulate data from a higher protocol layer and is only used to transfer signaling and control information between NAL entities in different Bluetooth nodes. This arrangement is illustrated in FIG. 12, where each contiguous gray area 1200 and 1202 represents the broadcast area of an NAL control packet.
>
> [0125] The AD broadcast type covers the LAN and any attached scatternets that are associated with the same AD as the LAN. These broadcast packets are forwarded by NAPs from/to the LAN to/from the scatternet, but the NAPSA borders in the scatternet are respected. This arrangement is illustrated in FIG. 13, where each contiguous gray area 1300-1304 represents the broadcast area of an AD broadcast packet. An

> AD broadcast packet is used to reach all the nodes in the AD (including the nodes on the LAN). All broadcast packets that are forwarded from the LAN to the scatternet are sent using the AD broadcast type.
>
> [0126] The scatternet-AD broadcast type is a special broadcast type used only for route requests. This broadcast type is, as the name implies, a combination of the scatternet broadcast type and the AD broadcast type. The scatternet-AD broadcast packets are distributed through the entire scatternet without respecting the NAPSA borders, as well as the entire AD via the NAPs. However, the NAPSA borders are respected after a scatternet-AD broadcast packet re-enters the scatternet via a NAP.

Thus, in Rune, the NAPSA broadcast packets are not forward to a scatternet, and the scatternet broadcast packets are not forwarded to the LAN. However, these packets are not forwarded based on their broadcast type, which is defined by an indicator in a NAL (network adaptive layer) header (emphasis added):

> [0122] In addition to the routing protocol discussed above, the NAL also has a broadcast mechanism. (Note that broadcasting on the LAN is inherent in the shared medium and no "broadcast" mechanism is needed.) In accordance with embodiments of the invention, the NAL includes four different types of broadcasts: NAPSA broadcast, scatternet broadcast, AD broadcast, and scatternet-AD broadcast. The differences between broadcast types lie in the scope of the distribution and how the NAPs and other nodes at the NAPSA borders treat the different broadcast packets. **Note that the broadcast type is defined by an indicator in the NAL header.** In that sense, these different broadcast types can only exist in the scatternet. On the other hand, an Ethernet broadcast packet (originated on the LAN) that is forwarded from the LAN to the scatternet becomes an AD broadcast packet when it is forwarded into the scatternet. The broadcast type may be indicated in the NAL header, for example, with a two-bit indicator, as indicated in Table 2.

Thus, the broadcast type is defined in Rune by an indicator in the NAL header.

It is clear that filtering of broadcast packets in Rune is performed without examination of destination addresses for packets (emphasis added):

> [0196] The second main component of the invention is the packet filtering mechanism. As already mentioned, a NAP does not indiscriminately forward packets. Instead, it uses the packet filtering mechanisms (see FIG. 9) to reduce the number of unnecessarily forwarded packets. For example, forwarding is unnecessary when both the source and the destination node are located on the same side of the NAP. Furthermore,

> NAL broadcast packets of the NAPSA broadcast type and the scatternet broadcast type are always blocked by the packet filtering mechanisms. **Only those packets that pass the packet filtering mechanisms are forwarded to the scatternet.** The generated useless traffic is a waste of resources, especially so in the scatternet where radio resources and processing resources are scarce. Furthermore, this could lead to the scatternet being flooded by traffic from the LAN with its shared medium and much higher capacity. Therefore, a packet filtering mechanism is needed in order to limit the forwarding of unnecessary traffic. The packet filtering is based on the destination address and the NAL packet type. Filtering may also be based on higher layer protocols.
>
> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. **The NAL packet type filtering**, in some embodiments of the invention, **is very simple: all *NAPSA broadcast type and scatternet broadcast type packets* are passed by the packet type filtering function 912 to the NAP-IPH, while *all other packet types* are passed to the address filtering function 914.**

Thus, packets having the NAPSA broadcast and scatternet broadcast ***types*** are filtered, and **all other packet *types*** are passed to an address filtering function, for forwarding to the correct address. See also, e.g., paragraphs [0222], [0224], [0237] of Rune.

As is noted in paragraphs [0125] and [0197] from Rune above, packets having the AD broadcast type are forwarded, as are packets having the scatternet-AD broadcast type (see paragraphs [0126] and [0197]).

Regarding multicast addresses, these appear to be related to route entries. See, e.g., the following:

> [0173] When (and if) the NAP-B of a NAP receives an encapsulated non-ARP-route-request (via the NAP-PFL), the NAP processes the non-ARP-route-request just like any node would process a received non-ARP-route-request. Thus, the NAP forwards the non-ARP-route-request into the scatternet, unless it already has a route to the destination node, or unless the NAP itself is the destination node. In the latter case, the NAP can immediately return an encapsulated non-ARP-route-reply. Then the next hop node in the route entry for the source node is indicated as "another NAP." This indication may be just a general indication, or it may be a specific indication that includes a NAP **multicast address** or the specific source MAC address of the Ethernet packet that carried the received encapsulated ARP-route-request. The choice between

> general indication, NAP multicast address or source MAC address depends on whether broadcast packets, multicast packets or unicast packets are used to carry a corresponding encapsulated ARP-route-reply.

See also paragraphs [0156], [0186], and [0187] of Rune. There are additional references to "multicast" in Rune, but none of these references relate to comparing a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Applicant can find nowhere in Rune of disclosure or implication of a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, as recited generally in the independent claims. Applicant has already shown above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the **combination** of Rune and Jou does not teach or imply this subject matter.

For at least these reasons, the §103(a) rejections against claim 22 should be withdrawn.

5. Claim 38

Claim 38 recites the following: "The apparatus according to claim 27, wherein the processor is configured to cause the apparatus to forward at least broadcast packets relating to address acquisition to the first device". Claim 27 depends from claim 22.

The rejection to claim 38 has a legal error. Since claim 27 is rejected using a combination of Rune and Vasisht (and presumably Jou's published application, although this is not mentioned in the rejection of claim 27), then claim 38 should also use a

combination of Rune and Vasisht, and the rejection to claim 38 does not. Therefore, the rejection must be withdrawn.

6. Claims 32, 34

The Examiner rejected claim 32 under 103(a) being unpatentable over Rune in view of Jou. Applicant respectfully disagrees.

Claim 32 is reproduced below.

> A memory storing a computer program, the computer program configured to control a processor to perform the following:
>
> check a destination address of a received packet;
>
> comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address;
>
> preventing transmission of the packet in the system to a first device in response to the addresses matching; and
>
> forwarding the packet to at least the first device in response to the addresses not matching.

The Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose at least the subject matter of comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address and preventing the transmission of the packet to a first device in response to the addresses matching.

The Examiner then points to Jou for alleged disclosure of this subject matter. However, Jou does not disclose this subject matter for at least the following reasons.

a) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): First Reason

The instant application has a priority date of 6 February 2004 under, e.g., M.P.E.P. §201.13, 35 U.S.C. §119 and 37 C.F.R. §1.55. That is, the priority date of 6 February 2004 is based on a Finnish application filed on that date, which later became an international (P.C.T.) application filed on 4 February 2005. The international application entered national stage in the United States on 10 October 2006 as the instant application. A proper claim for priority was made at least in the Declaration filed on 10 October 2006. In fact, the U.S. Patent Publication no. 2007/0127394 of the instant application lists "Foreign Application Priority Data" as "Feb. 6, 2004", as shown by the following portion of the first page of this publication:

US 2007/0127394 A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0127394 A1**

Stirbu et al. (43) **Pub. Date: Jun. 7, 2007**

(54) METHOD AND SYSTEM FOR OPTIMIZATION OF DATA TRANSFER BETWEEN NETWORKED DEVICES

(75) Inventors: Vlad Stirbu, Tampere (FI); Mika Saaranen, Tampere (FI)

Correspondence Address:
SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182 (US)

(73) Assignee: Nokia Corporation

(21) Appl. No.: 10/587,979

(22) PCT Filed: Feb. 4, 2005

(86) PCT No.: PCT/FI05/00077

§ 371(c)(1),
(2), (4) Date: Oct. 10, 2006

(30) Foreign Application Priority Data

Feb. 6, 2004 (FI) 20040179

Publication Classification

(51) Int. Cl.
H04L 12/28 (2006.01)
H04L 12/56 (2006.01)

(52) U.S. Cl. 370/254; 370/389

(57) ABSTRACT

The invention relates to a method of arranging communication in a local area networking system comprising a first device, a second device and an intermediate node for arranging data transmission between the first device and the second device. The second device is arranged to multicast and/or broadcast messages to devices in the system. The transmission of multicast and/or broadcast messages to the first device is prevented by the interworking means.

Therefore, the priority date of the instant invention is 6 February 2004.

Turning to Jou, the published application 2005/0036489 was filed on 10 August 2004, after the priority date of 6 February 2004 of the instant application. Jou's published application claims priority from provisional application 60/495,186, a copy of which is enclosed herein in section (9), "Evidence Appendix". This copy was also submitted in the after-final amendment dated 4 August 2011 (as Appendix A). The Jou provisional application was filed on 15 August 2003. Therefore, for material to be cited under 35 U.S.C. §102 (and therefore §103) against the instant application, that material must exist prior to the priority date of the instant application of 6 February 2004.

The Examiner cites to paragraph 29 of Jou's published application, which states the following:

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. The wireless transport device will determine whether or not the DA filed is the same as the local MAC address of this device (510). If positive, the wireless transport device drops the frame because it is an echoed frame (step 530). Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

The Examiner relies on this section of Jou's published application in order to assert that Jou's published application discloses the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address":

> response to the address not matching. However, Jou teaches comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching [see paragraph 0029 where a wireless transport device (intermediate node) receives a broadcast frame; the wireless transport device determines whether or not the Destination Address field is the same as the local MAC address (predetermined multicast address) of this device; if positive (in response the addresses matching), the wireless transport device drops the frame]. It would have been obvious for a person having ordinary skill in the art to

Final Office Action, dated 24 May 2011. That is, the Examiner is relying on the statement "The wireless transport device will determine whether or not the DA [destination address] filed (sic – should be "field") is the same as the local MAC address of this device (510)" in paragraph 29 of Jou's published application in order for Jou's published application to disclose the subject matter in the instant claims of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address".

However, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding a destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding a destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102.

Consequently, the sections cited by the Examiner of Jou's published application cannot be cited as prior art against the claims of the instant application. Because the Examiner admits that Rune does not disclose certain subject matter from the

claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

Applicant made similar arguments in the after-final Amendment dated 4 August 2011. In response, the Examiner in the Advisory Action dated 12 September 2011 stated the following:

> In response to applicant's argument that the Jou reference is not valid because the provisional application does not contain the cited paragraph (see applicant's remarks page 9-10), it should be noted that Jou's provisional application still have support for said paragraph (See second paragraph under 'summary of the invention' in page 3 where Jou teaches "When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize (compare and determine) it should drop the frames without processing")

Advisory Action dated 12 September 2011, page 2. What Jou's provisional application states is the following:

> 4. The method for a transport device when relays a broadcast frame, to add the address information of the previous hop from where the frame comes into the transmitted frame.
>
> 5. The method according to claim 4, wherein:
>
> When a wireless transport device receives a broadcast frame whose "previous hop" field contains its own address, the device can drop the frame without any further processing.
>
> For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realized it should drop the frames without processing.

Jou's provisional application, page 1. See also:

> To filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame so once the previous hop receives the frames, it can ignore these echo frames without further processing. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize it should drop the frames without processing.

Jou's provisional application, page 3.

Regardless, Jou's provisional application does not state or imply that the "previous hop" field **is a destination address field** (in fact, Applicant cannot find the term "destination address" used anywhere in Jou's provisional application). This is important because the Examiner is using Jou to allegedly disclose the subject matter of "comparing **the destination address** of the packet with at least one predetermined multicast and/or broadcast address". Jou's provisional application simply does not disclose anything related to a destination address field or its use. Furthermore, the "previous hop" field disclosed in Jou's provisional application certainly does **not** contain a "destination address", as this field contains instead "address information of the previous hop from where the frame comes". See page 1, claim 4 (and claim 5) of Jou's provisional application.

As stated above, **the subject matter regarding using a destination address field (e.g., for containing a previous hop address) does not appear in Jou's provisional application**. This subject matter regarding the destination address field therefore has the filing date (10 August 2004) of Jou's published application (and not the earlier filing date of Jou's provisional application). The filing date (10 August 2004) of Jou's published application is after the priority date (6 February 2006) of the instant application, and therefore the cited subject matter regarding the destination address field in paragraph 29 of Jou's published application does not qualify as prior art under 35 U.S.C. §102. Because the Examiner admits that Rune does not disclose certain subject matter from the claims, and some of that certain subject matter supposedly disclosed in Jou's published application is not prior art against the independent claims, then the combination of Rune and Jou does not disclose this certain subject matter. Applicant respectfully submits the §103(a) rejections against the independent claims must fail.

b) Jou does not disclose the subject matter alleged by the Examiner (and therefore the combination of Rune and Jou does not disclose this subject matter): Second Reason

Even if the cited sections of Jou's published application are prior art against the instant independent claims, Applicant respectfully submits that Jou's published application does not disclose the subject matter the Examiner asserts is disclosed by Jou's published application. For instance, the Examiner cites to paragraph 29 of Jou's published application (emphasis added):

> [0029] FIG. 5 illustrates the processing flow chart on receiving a broadcast frame. In step 500, a wireless transport device receives a broadcast frame. **The wireless transport device will determine whether or not the DA filed (sic – should be "field") is the same as the local MAC address of this device (510).** ***If positive, the wireless transport device drops the frame because it is an echoed frame (step 530).*** Otherwise, it uses Auxiliary Address to verify whether this frame is received through the correct neighbor, namely in step 520, to look up the route table. Subsequently, in step 540, the wireless transport device determines whether the TA address is the neighboring node the frame should come from. If positive, then the wireless transport device relays the frame or performs other process (550), otherwise, drops the frame (step 530).

This section of Jou's published application indicates that a determination is made of whether or not the DA (destination address) is the same as the local MAC (media access control) address of the device. It is known in the art that a MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment. What the sentence "If positive, the wireless transport device drops the frame because it is an echoed frame (step 530)" appears to mean is that the current device previously transmitted the frame, and the frame is being echoed back to the device. Thus, the device put the MAC address of itself into the frame, and transmitted the frame. When the device receives a frame that has its MAC address, the device then determines the frame is an echoed frame and can be ignored. See also paragraph 22 of Jou's published application (emphasis added):

> [0022] Depending on the method in unicast routing path calculation, the forwarding table for unicast frames can be used as the table that is used to look up the incoming neighboring device for a broadcast frame originator (i.e. FIG. 2). In this case, there is no extra effort in generating the broadcast frame reduction table. The other method to reduce the resource spending on broadcast frames is to reduce the processing effort for echoed broadcast frames. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, most likely device X will receive both the frames. Using the method mentioned earlier can cause the frames being dropped eventually. However, a table lookup for each frame will be needed for device X. To relieve the processing load, N1 and N2 can both add the address of X inside the frame. When X receives a broadcast frame, it can check whether the frame is echoed from itself. If so, the frame can be dropped immediately without processing. **Therefore, to filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame.** This can be achieved by using an unused field in the 802.11 MAC header. In broadcasting, the Address 3 (DA, destination address) of FIG. 3 is not used. The "previous hop" information is carried in the location the Address 3 (DA, destination address).

Moreover, the MAC address of the device is not a "broadcast address", as the MAC address is the address of the device itself: "The wireless transport device will determine whether or not the DA filed (sic – should be "field") **is the same as the local MAC address of this device** (510)." Paragraph 29 of Jou's published application. See also paragraph 22 of Jou's published application: "Therefore, to filter out echo frames, broadcast frames have to carry the address information of [the] **previous hop** in the transmitted frame." Another device receiving the frame with the MAC address of the previous hop is not going to determine the MAC address is a broadcast address or use the MAC address as a broadcast address. This means that the MAC address of a device will not be the same as the broadcast address. The same is true for a multicast address: a multicast address will not be the same as a MAC address. This is true because, by definition, the multicast address is to be used for communication with multiple addresses/devices, while a MAC address is made to be specific to a single device.

To put this a different way, any device receiving a packet with a destination address that is the same as a MAC address of one of the devices on a network should forward the packet toward the device having that MAC address. However, there is only one device in the network with that MAC address. Therefore, the MAC address is not a broadcast address (a packet addressed with a broadcast address is destined for every device in the network) or is not a multicast address (a packet addressed with a multicast address is destined for at least two devices in the network).

In the Advisory Action dated 12 September 2011, the Examiner states the following:

'multicast/broadcast and destination address). The recitations broadcast/multicast address and multicast address are not defined by the claim; the specification does not provide a clear explanation of said terms. In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art [MPEP 2111.01]. In this case Jou's destination address (although MAC address of the previous hop) is considered a multicast address since it is a multicast destination address (as shown above and discussed in paragraph 0022-Jou). Applicant's arguments do not show how the claims prevent a reasonable broadest interpretation of said terms would prevent such interpretation as supported by the Jou reference.

Advisory Action dated 12 September 2011, page 2.

One skilled in the art knows what the terms "MAC address", "multicast address", and "broadcast address" are. See, e.g., http://en.wikipedia.org/wiki/MAC_address ("MAC address"), http://en.wikipedia.org/wiki/Multicast_address ("multicast address"), and http://en.wikipedia.org/wiki/Broadcast_address ("broadcast address"). In fact, it is known that a broadcast address in MAC (e.g., 802.11) is all ones, e.g., FFFFFFFF for 32 bits in hexadecimal. See paragraph 27 of Jou ("a broadcast frame in WITnet is a WDS frame with Receiver Address Field (please refer to FIG. 3) being, for instant (sic), 0xffffffffffff"), or http://en.wikipedia.org/wiki/MAC_address ("Packets sent to the broadcast address, all one bits, are received by all stations on a local area network. In hexadecimal the broadcast address would be FF:FF:FF:FF:FF:FF"). Jou is using the

broadcast address of 0xffffffffffff consistently with what is known in the art for one particular network and protocol.

Additionally, even the term "destination address" is respectfully being read by the Examiner in a manner not consistent with the way one skilled in the art would read the term. Applicant's claim recites (in general) comparing the destination address of the packet with at least one multicast and/or broadcast address. In Jou's published application, a value in a destination address **field** is compared with a MAC address of the device receiving the packet. (See paragraph 29 of Jou's published application.) What is in the destination address **field** is not a "destination address" as this term is commonly used in the art. Instead, it is the MAC address of the previous hop. See the last sentence of paragraph 22 and paragraph 29 of Jou's published application. In fact, the actual "destination address" of the packet in Jou's published application appears to be in the Receiver Address Field and has a value of 0xffffffffffff. See paragraph 27 of Jou. Thus, even the term "destination address" is being read by the Examiner in a way that is not the way one skilled in the art would read this term.

Therefore, Applicant respectfully submits that it is the Examiner who is interpreting the terms "multicast address" and "broadcast address" in a way that is not in accord with the way these terms would be interpreted by one skilled in the art. That is, one skilled in the art would not interpret MAC, broadcast, and multicast addresses in the way the Examiner is interpreting these terms in order to get Jou to read on the instant independent claims.

Thus, for at least the above reasons, Jou's published application does not disclose at least the subject matter of "comparing the destination address of the packet

with at least one predetermined multicast and/or broadcast address", as recited in claim 32 and generally in the other independent claims.

Because the Examiner admits that Rune does not disclose the subject matter in the claims of "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and because Jou's published application does not disclose this certain subject matter, the combination of Rune and Jou does not disclose this subject matter. Applicant respectfully submits the 103(a) rejections against the independent claims must fail.

c) The combination of Rune and Jou

The Applicant has stated above that the combination of Rune and Jou does not disclose all features of the independent claims, including claim 32. For instance, the Examiner states the following:

> However Rune does not explicitly teach comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address; preventing, the transmission of the packet to a first device in response to the addresses matching; in response to the address not matching. However, Jou teaches comparing the destination

Outstanding Office Action, page 3. Therefore, the Examiner admits that Rune does not disclose this subject matter. The Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the combination of Rune and Jou does not teach or imply this subject matter.

Nonetheless, the Examiner states the following in the Advisory Action dated 12 September 2011:

Examiner respectfully disagrees with applicant's assertion that Rune does not teach "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" and "preventing the transmission of the packet to a first device in reponse to the addresss matching" (see applicant's remarks pages 13-16). This assertion amounts to attacking the reference idividually. The office action relied upon the Jou reference for teaching "comparing the destinatino address of the packet with the at least one predetermined multicast and/or broadcast addess" (specially the step of 'comparing', 'destination address' and 'multicast address' are disclosed by the Jou reference). In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 600 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, examiner respectfully disagrees with applicant's statements that seem to imply that filtering is done (only?) by filtering out packets by type and not address. In contrast, even though Rune teaches filtering out by type, Rune also teaches filtering out by address (see paragraph 0215). Therefore, one having ordinary skill in the art would take Rune (for teaching filtering out broadcast packets by address, and use Jou to learn how to filter by address (i.e. comparing the destination address of the packet with multicast address).

Applicant respectfully submits that Applicant has stated multiple times that the combination of Rune and Jou does not disclosed the features of the independent claims, as the Examiner admits that Rune does not disclose this subject matter and the Applicant shows above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. If the Examiner admits that Rune does not disclose certain subject matter and Applicant shows that some or all of that subject matter is not disclosed or implied by Jou, then the combination of Rune and Jou **cannot** disclose or imply that subject matter.

For sake of argument, however, Applicant will now show that even though the Examiner has admitted that Rune does not disclose "comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address", and "preventing the transmission of the packet to a first device in response to the addresses matching", Applicant will now show the same.

Applicant cannot find in Rune where a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

There are a number of indications that can include multicast addresses in Rune. See, e.g., paragraphs 156, 173, 186, and 187 of Rune. However, nowhere in these paragraphs (or any other paragraphs) of Rune can Applicant find a comparison that is

performed between a multicast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Regarding broadcast addresses, Rune makes specific reference to these addresses in paragraphs 215 and 291, neither of which involves a comparison using a destination address and a broadcast address.

Rune does discuss packet filtering. See paragraphs 195-218 of Rune. If this packet filtering is in any way related to a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, Applicant cannot find in Rune where that is the case. In fact, Rune states the following (emphasis added):

> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. The NAL packet type filtering, in some embodiments of the invention, is very simple: **all NAPSA broadcast type and scatternet broadcast type packets are passed by the packet type filtering function 912 to the NAP-IPH**, while all other packet types are passed to the address filtering function 914.

This section of Rune appears to teach away from comparing a broadcast address and a destination address, as all broadcast type packets are simply forwarded.

In paragraph 215, Rune states the following (emphasis added):

> [0215] For broadcast ARP replies received from the LAN, the address filtering process is much more complicated. The address filtering function first extracts the "target MAC address" from the ARP reply. This is the MAC address of the intended receiver of the ARP reply. In other words, this is the MAC address of the node that sent the ARP request (or possibly the ARP-route-request) that triggered the ARP reply. **The target MAC address is extracted even though the destination address of the packet is a broadcast address. The target MAC address is then made subject to the same check as a destination address of a unicast packet.** If the target MAC address was not found in the address table or if it was found in the address table and the address table indicated that the corresponding node is located on the scatternet side of the NAP, the

> packet is passed to the NAP-B. **The address filtering function then has an option to convert the broadcast ARP reply into a unicast ARP reply by replacing the broadcast address with the target MAC address in the destination address field.** The purpose of this option is to save resources (mainly bandwidth) in the scatternet.

None of the highlighted (or any other portion) of this cited text indicates in any way that a comparison is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

What Rune states regarding broadcast types is the following (emphasis added)

> [0123] FIGS. 10-15 illustrate the coverage areas of the different broadcast types. The NAPSA broadcast type, as the name implies, is used to broadcast packets to a single NAPSA. This is illustrated in FIG. 10 (which is similar to FIG. 8), where each isolated gray area 1000-1008 represents a different NAPSA broadcast area. **A NAPSA broadcast packet is not allowed to leave its broadcast area.** Thus, NAPSA broadcast packets are not forwarded to the LAN and are not allowed to cross a NAPSA border.
>
> [0124] The scatternet broadcast type, as the name implies, is used to broadcast packets within the scatternet. This arrangement is illustrated in FIG. 11, where each contiguous gray area 1100-1106 represents different broadcast areas for a scatternet broadcast packet. **Such broadcast packets are not forwarded to the LAN.** When more than one AD exists in a scatternet, the scatternet broadcast packets carrying higher layer protocol packets, i.e. packets from protocol layers above the NAL, e.g. IP, are not allowed to cross an AD border. These packets are consequently limited to a part of the scatternet belonging to the same AD. Scatternet broadcast packets that are not carrying packets from higher layer protocols, such as NAL control packets, however, are allowed to cross AD borders and may therefore still be broadcast in the whole scatternet. A NAL control packet does not encapsulate data from a higher protocol layer and is only used to transfer signaling and control information between NAL entities in different Bluetooth nodes. This arrangement is illustrated in FIG. 12, where each contiguous gray area 1200 and 1202 represents the broadcast area of an NAL control packet.
>
> [0125] The AD broadcast type covers the LAN and any attached scatternets that are associated with the same AD as the LAN. These broadcast packets are forwarded by NAPs from/to the LAN to/from the scatternet, but the NAPSA borders in the scatternet are respected. This arrangement is illustrated in FIG. 13, where each contiguous gray area 1300-1304 represents the broadcast area of an AD broadcast packet. An

> AD broadcast packet is used to reach all the nodes in the AD (including the nodes on the LAN). All broadcast packets that are forwarded from the LAN to the scatternet are sent using the AD broadcast type.
>
> [0126] The scatternet-AD broadcast type is a special broadcast type used only for route requests. This broadcast type is, as the name implies, a combination of the scatternet broadcast type and the AD broadcast type. The scatternet-AD broadcast packets are distributed through the entire scatternet without respecting the NAPSA borders, as well as the entire AD via the NAPs. However, the NAPSA borders are respected after a scatternet-AD broadcast packet re-enters the scatternet via a NAP.

Thus, in Rune, the NAPSA broadcast packets are not forward to a scatternet, and the scatternet broadcast packets are not forwarded to the LAN. However, these packets are not forwarded based on their broadcast type, which is defined by an indicator in a NAL (network adaptive layer) header (emphasis added):

> [0122] In addition to the routing protocol discussed above, the NAL also has a broadcast mechanism. (Note that broadcasting on the LAN is inherent in the shared medium and no "broadcast" mechanism is needed.) In accordance with embodiments of the invention, the NAL includes four different types of broadcasts: NAPSA broadcast, scatternet broadcast, AD broadcast, and scatternet-AD broadcast. The differences between broadcast types lie in the scope of the distribution and how the NAPs and other nodes at the NAPSA borders treat the different broadcast packets. **Note that the broadcast type is defined by an indicator in the NAL header.** In that sense, these different broadcast types can only exist in the scatternet. On the other hand, an Ethernet broadcast packet (originated on the LAN) that is forwarded from the LAN to the scatternet becomes an AD broadcast packet when it is forwarded into the scatternet. The broadcast type may be indicated in the NAL header, for example, with a two-bit indicator, as indicated in Table 2.

Thus, the broadcast type is defined in Rune by an indicator in the NAL header.

It is clear that filtering of broadcast packets in Rune is performed without examination of destination addresses for packets (emphasis added):

> [0196] The second main component of the invention is the packet filtering mechanism. As already mentioned, a NAP does not indiscriminately forward packets. Instead, it uses the packet filtering mechanisms (see FIG. 9) to reduce the number of unnecessarily forwarded packets. For example, forwarding is unnecessary when both the source and the destination node are located on the same side of the NAP. Furthermore,

> NAL broadcast packets of the NAPSA broadcast type and the scatternet broadcast type are always blocked by the packet filtering mechanisms. **Only those packets that pass the packet filtering mechanisms are forwarded to the scatternet.** The generated useless traffic is a waste of resources, especially so in the scatternet where radio resources and processing resources are scarce. Furthermore, this could lead to the scatternet being flooded by traffic from the LAN with its shared medium and much higher capacity. Therefore, a packet filtering mechanism is needed in order to limit the forwarding of unnecessary traffic. The packet filtering is based on the destination address and the NAL packet type. Filtering may also be based on higher layer protocols.
>
> [0197] The NAL packet type filtering in the NAP is performed in the packet type filtering function 912, which is present only on the scatternet side of the NAP. **The NAL packet type filtering**, in some embodiments of the invention, **is very simple: all *NAPSA broadcast type and scatternet broadcast type packets* are passed by the packet type filtering function 912 to the NAP-IPH, while *all other packet types* are passed to the address filtering function 914.**

Thus, packets having the NAPSA broadcast and scatternet broadcast ***types*** are filtered, and **all other packet *types*** are passed to an address filtering function, for forwarding to the correct address. See also, e.g., paragraphs [0222], [0224], [0237] of Rune.

As is noted in paragraphs [0125] and [0197] from Rune above, packets having the AD broadcast type are forwarded, as are packets having the scatternet-AD broadcast type (see paragraphs [0126] and [0197]).

Regarding multicast addresses, these appear to be related to route entries. See, e.g., the following:

> [0173] When (and if) the NAP-B of a NAP receives an encapsulated non-ARP-route-request (via the NAP-PFL), the NAP processes the non-ARP-route-request just like any node would process a received non-ARP-route-request. Thus, the NAP forwards the non-ARP-route-request into the scatternet, unless it already has a route to the destination node, or unless the NAP itself is the destination node. In the latter case, the NAP can immediately return an encapsulated non-ARP-route-reply. Then the next hop node in the route entry for the source node is indicated as "another NAP." This indication may be just a general indication, or it may be a specific indication that includes a NAP **multicast address** or the specific source MAC address of the Ethernet packet that carried the received encapsulated ARP-route-request. The choice between

> general indication, NAP multicast address or source MAC address depends on whether broadcast packets, multicast packets or unicast packets are used to carry a corresponding encapsulated ARP-route-reply.

See also paragraphs [0156], [0186], and [0187] of Rune. There are additional references to "multicast" in Rune, but none of these references relate to comparing a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet.

Applicant can find nowhere in Rune of disclosure or implication of a comparison that is performed between a multicast and/or broadcast address and a destination address of a packet in order to prevent transmission of the packet or forward the packet, as recited generally in the independent claims. Applicant has already shown above that Jou's published application either is not valid prior art against the instant claims or does not teach or imply this subject matter. Therefore, the **combination** of Rune and Jou does not teach or imply this subject matter.

For at least these reasons, the §103(a) rejections against claim 32 should be withdrawn.

B. Second grounds for rejection

Claims 19, 20, 26, 27, and 33 stand rejected under 35 U.S.C. §103(a) over Rune in view of Vasisht. Applicant respectfully disagrees.

First, it should be noted that claims 19, 20, 26, 27, and 33 are dependent claims that depend from independent claims 16 (claims 19 and 20), 22 (claims 26 and 27) and 32 (claim 33). Consequently, the rejections to claims 19, 20, 26, 27, and 33 should be based on a combination of Rune, Jou (Jou's published application) and Vasisht, and the rejections are not. Therefore, these rejections should fail for at least this reason.

a) Claims 19, 26, 33

Claim 19 recites "A method as claimed in claim 16, wherein the packet is received from a second device, and wherein the first device belongs to a mobile handheld subcommittee domain of a universal plug and play system and the second device belongs to a home network version 1 domain of the universal plug and play system." All Vasisht adds to Rune (or the combination of Rune and Jou's published application) is that universal plug and play is an example of a standard to enable home networking. See paragraph 7 of Vasisht.

However, the combination of claims 16 and 19 indicate that a packet may or may not be transmitted to the mobile handheld subcommittee domain of a universal plug and play system based on whether the destination address of the packet does not match or matches (respectively) at least one multicast or broadcast address. A stated above, Rune alone (or the combination of Rune and Jou's published application) does not disclose or imply this subject matter, and Vasisht also does not disclose or imply this subject matter. Therefore, the combination of Rune and Vasisht (or the combination of Rune and Jou's published application and Vasisht) does not disclose this subject matter and the §103(a) rejections to claim 19 should be withdrawn.

b) Claims 20, 27

Claim 20 recites "A method as claimed in claim 19, wherein transmission of universal plug and play discovery multicast packets to the first device is prevented." Nowhere does Rune alone or Vasisht alone (or Jou's published application alone) indicate that universal plug and play discovery multicast packets to a first device belonging to a mobile handheld subcommittee domain of a universal plug and play system are prevented. Therefore, the combination of Rune and Vasisht (or Rune and Jou's published application

and Vasisht) does not disclose that universal plug and play discovery multicast packets to a first device belonging to a mobile handheld subcommittee domain of a universal plug and play system are prevented. For at least this reason, the §103(a) rejections to claim 20 should be withdrawn.

C. Third grounds for rejection

The third grounds for rejection presented for review by the Board is whether claim 36 is patentable under 35 U.S.C. §103(a) over Rune in further view of Tung, U.S. Patent Publication no. 2006/0136562.

First, it should be noted that claim 36 is dependent from independent claim 22. Consequently, the rejections to claim 36 should be based on a combination of Rune, Jou (Jou's published application) and Tung, and the rejections are not. Therefore, these rejections should fail for at least this reason.

Claim 36 recites "The apparatus according to claim 22, wherein the processor is configured to check whether the first device is in sleep mode and, when the first device is in sleep mode, the processor is configured to wake up the first device before forwarding the packet to the first device."

It should be noted that Tung is incomprehensible. For instance, and as only one of many examples, Tung states the following (emphasis added):

> [0016] As shown in FIG. 2, personal computer 11 connects to the Internet and operates in a reduced power mode when not receiving any service request from the Internet. **When a service request is received via a personal network server 11 (i.e. personal computer 11)**, the Internet user sends a request for the domain name "home.com" to domain name server 12. Domain name server 12 **sends a wake-up signal to the network server (personal computer 11)** represented by the domain name to wake up personal computer 11 from the suspended state, enabling personal computer to operate in a normal mode. Next, domain name server 12 assigns an IP address "203.56.56.56" corresponding to personal

> computer 11 according to built-in domain names and corresponding relationships for IP addresses, and responds to the request with the assigned IP address.

How does the network server (personal computer) receive a request while the network server (personal computer) is asleep? And if the service request is received via the network server, why does an Internet user send a request to a domain name server?

Regardless, the combination of claim 36 and claim 22 will wake up the first device prior to sending a packet to the first device and then will send a packet to the first device. Inasmuch as Applicant can tell by reading Tung, Tung does not appear to send a packet to the "network server" after waking the "network server" up. For instance, Tung states the following:

> [0016] As shown in FIG. 2, personal computer 11 connects to the Internet and operates in a reduced power mode when not receiving any service request from the Internet. When a service request is received via a personal network server 11 (i.e. personal computer 11), the Internet user sends a request for the domain name "home.com" to domain name server 12. Domain name server 12 sends a wake-up signal to the network server (personal computer 11) represented by the domain name to wake up personal computer 11 from the suspended state, enabling personal computer to operate in a normal mode. Next, **domain name server 12** assigns an IP address "203.56.56.56" corresponding to personal computer 11 according to built-in domain names and corresponding relationships for IP addresses, and **responds to the request with the assigned IP address**.
>
> ...
>
> [0022] In step S35, when a request for the domain name is received, a wake-up signal is sent to the network server for switching the network server to a normal mode, and an IP address corresponding to the server name is assigned according to the link.
>
> [0023] In step S36, **the domain name server responds to the request with the assigned IP address**.

That is, it appears (inasmuch as Applicant can tell) that in Tung, a domain name server receives a request, wakes a "network server", then the domain name server responds to the request. No packet appears to be sent from the domain name server to the network server

after the network server is woken up. Therefore, at least the subject matter of "wherein the processor is configured to check whether the first device is in sleep mode and, when the first device is in sleep mode, the processor is configured to wake up the first device before forwarding the packet to the first device" is not taught or implied by Tung.

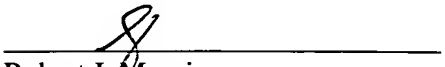
Rune (and Jou's published application) does not disclose or imply this subject matter. Therefore, the combination of Rune and Tung (or Rune and Jou's published application and Tung) does not disclose or imply the subject matter in claim 36, and the §103(a) rejections to claim 36 should be withdrawn.

CONCLUSION

For at least the above reasons, the Applicant contends that claims 16-28, 32-34, 36, and 38 are patentable over the cited references. The Applicant respectfully requests the Board reverse the final rejection in the Office Action of 24 May 2011, and further that the Board rule that the pending claims are patentable over the cited references.

Respectfully submitted:

HARRINGTON & SMITH, Attorneys at Law, LLC



12/29/11

Robert J. Mauri
Reg. No.: 41,180

Date

Customer No.: 10,948

HARRINGTON & SMITH, Attorneys at Law, LLC
4 Research Drive
Shelton, CT 06484-6212
Telephone: (203)925-9400
Facsimile: (203)944-0245
email: rmauri@hspatent.com

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Claire F. Mian — Name of Person Making Deposit

12/30/2011 — Date

(8) CLAIMS APPENDIX

1.-15. (Cancelled)

16. A method comprising:

checking a destination address of a received packet;

comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address;

preventing the transmission of the packet to a first device in response to the addresses matching; and

forwarding the packet to at least the first device in response to the addresses not matching.

17. A method as claimed in claim 16, wherein the packet is received from a second device, and wherein the method further comprises connecting a first network comprising the first device to a second network comprising the second device, and wherein the first and second networks use different data transmission protocols.

18. A method as claimed in claim 16, wherein the destination address is an internet protocol address.

19. A method as claimed in claim 16, wherein the packet is received from a second device, and wherein the first device belongs to a mobile handheld subcommittee domain of a universal plug and play system and the second device belongs to a home network version 1 domain of the universal plug and play system.

20. A method as claimed in claim 19, wherein transmission of universal plug and play discovery multicast packets to the first device is prevented.

21. A system comprising:

a first device;

a second device; and

an intermediate node configured to arrange data transmission between the first device and the second device;

wherein at least the second device is configured to multicast and/or broadcast packets to devices in the system, wherein the intermediate node is configured to check a destination address of a packet received from the second device, the intermediate node is configured to compare the destination address of the packet with at least one predetermined multicast and/or broadcast address, and wherein the intermediate node is configured to prevent the transmission of the packet to the first device in response to the addresses matching, and wherein the intermediate node is configured to forward the packet to at least the first device in response to the addresses not matching.

22. An apparatus comprising:

a processor configured to

check a destination address of a received packet, ;

compare the destination address of the packet with at least one predetermined multicast and/or broadcast address;

prevent the transmission of the packet to a first device in response to the addresses matching; and

forward the packet to at least the first device in response to the addresses not matching.

23. The apparatus according to claim 22, wherein the packet is received from a second device, and wherein the processor is configured to cause the apparatus to connect a first network comprising the first device to a second network comprising the second device and the first and second networks use different data transmission protocols.

24. The apparatus according to claim 23, wherein the processor is configured to cause the apparatus to perform data transmission between an IEEE 802-based network to which the second device belongs and a bluetooth network to which the first device belongs.

25. The apparatus according to claim 22, wherein the destination address is an internet protocol address.

26. The apparatus according to claim 22, wherein the packet is received from a second device, and wherein the processor is configured to cause the apparatus to provide data transmission between the first device belonging to a mobile handheld subcommittee domain of a universal plug and play system and the second device belonging to a home network version 1 domain of the universal plug and play system.

27. The apparatus according to claim 26, wherein

the processor is configured to prevent transmission of universal plug and play discovery multicast packets to the first device.

28. The apparatus according to claim 22, wherein the processor is configured to check, in addition to the comparison of the destination address of the packet with at least one predetermined multicast and/or broadcast address, if the packet complies with one or more further message transmission conditions, and the processor is configured to allow forwarding of the packet to the first device in response to the packet complying with the one or more further message transmission conditions.

29.-31. (Canceled)

32. A memory storing a computer program, the computer program configured to control a processor to perform the following:

check a destination address of a received packet;

comparing the destination address of the packet with at least one predetermined multicast and/or broadcast address;

preventing transmission of the packet in the system to a first device in response to the addresses matching; and

forwarding the packet to at least the first device in response to the addresses not matching.

33. A memory according to claim 32, wherein the computer program is further configured to control the processor to prevent transmission of universal plug and play discovery multicast packets to the first device.

34. A memory according to claim 32, wherein the computer program is further configured to control the processor to compare one or more properties of the packet to properties specified in predetermined transmission conditions to determine whether the packet should be forwarded to the first device.

35. (Canceled)

36. The apparatus according to claim 22, wherein the processor is configured to check whether the first device is in sleep mode and, when the first device is in sleep mode, the processor is configured to wake up the first device before forwarding the packet to the first device.

37. (Canceled)

38. The apparatus according to claim 27, wherein the processor is configured to cause the apparatus to forward at least broadcast packets relating to address acquisition to the first device

END OF CLAIMS

(9) EVIDENCE APPENDIX

The following is a copy of U.S. provisional application 60/495,186. This copy was submitted as an Appendix in the after-final response filed on 4 August 2011. The Examiner responded to this Appendix and the corresponding arguments in the Advisory Action dated 12 September 2011, so it is believed the Examiner entered the copy of U.S. provisional application 60/495,186.

The following is a copy of U.S. provisional application 60/495,186.

08/15/03 11324 U.S. PTO

PTO/SB/16 (08-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Tyan-Shu	Jou	Cary, NC

Additional inventors are being named on the 1 *separately numbered sheets attached hereto*

TITLE OF THE INVENTION (500 characters max)

Methods and Apparatus for Broadcast Traffic Reduction on a Wireless Transport Network

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☐ Customer Number:

OR

☒ Firm or Individual Name	Ted Kuo				
Address	502 Lowell Ave.				
Address					
City	Palo Alto	State	CA	Zip	94301
Country	U.S.A.	Telephone	650-5689431	Fax	

15535 U.S. PTO 60/495186 08/15/03

ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification *Number of Pages* 4 ☐ CD(s), Number

☒ Drawing(s) *Number of Sheets* 1 ☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fees.

☐ The Director is herby authorized to charge filing fees or credit any overpayment to Deposit Account Number:

☒ Payment by credit card. Form PTO-2038 is attached.

FILING FEE Amount ($)

80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are:

[Page 1 of 2]

Respectfully submitted,

SIGNATURE Tyan-Shu Jou

TYPED or PRINTED NAME Tyan-Shu Jou

TELEPHONE 919-387-3653

Date Aug. 11, 2003

REGISTRATION NO. *(if appropriate)*

Docket Number:

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PROVISIONAL APPLICATION COVER SHEET
Additional Page

PTO/SB/16 (08-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Docket Number

INVENTOR(S)/APPLICANT(S)		
Given Name (first and middle [if any])	Family or Surname	Residence (City and either State or Foreign Country)
Ming-Jye	Sheu	San Jose, CA
Ted Tsei	Kuo	Palo Alto, CA

[Page 2 of 2]

Number 1 of 1

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Methods and Apparatus for Broadcast Traffic Reduction on a Wireless Transport Network

References Cited

- US Patent Document 5,570,366, Baker, et al., "Broadcast/multicast filtering by the bridge-based access point," October 29, 1996.

- US Patent Document 6,549,786, R. Y. M. Cheung, "Method and apparatus for connecting a wireless LAN to a wired LAN," April 15, 2003.

Claims

The embodiments of the invention claim the following:

1. The method for a device to calculate a table that each entry contains the neighboring device from which a broadcast frame originated from a particular device can be received.

2. The method according to claim 1, further comprising the steps of:

   for broadcast frames originated from the particular device, only the ones relayed through the listed neighboring device can be accepted. Broadcast frames coming through incorrect neighboring device are duplicates and should be ignored or dropped.

3. The method according to claim 1, further comprising the steps of:

   carrying the name or address of the originator wireless transport device as part of the broadcast frames to facilitate the filtering on broadcast frames.

4. The method for a transport device when relays a broadcast frame, to add the address information of the previous hop from where the frame comes into the transmitted frame.

5. The method according to claim 4, wherein:

   When a wireless transport device receives a broadcast frame whose "previous hop" field contains its own address, the device can drop the frame without any further processing.

   For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realized it should drop the frames without processing.

1

6. The method to embed the announcement information of a newly associated wireless client of a transport device into a broadcast frame the client generates if it is the first frame from the client system into the network.

7. The election among the multiple edge devices connecting the wireless network to a wired network to enable only one edge device to relay broadcast traffic across the wired and wireless network.

Description

THE FIELD OF THE INVENTION

The present invention relates to communications systems that comprise wireless networks. The invention is particularly concerned with reducing transmission information frames on the wireless networks and across the wireless and wired border line and is most useful in networks requiring multi-hop wireless communication.

BACKGROUND OF THE INVENTION

A wireless transport network is a network comprises a plurality of wirelessly connected devices that are responsible for relaying traffic for associated mobile clients. An example of a wireless transport network is a plurality of IEEE 802.11 capable devices that provide transport service for IEEE 802.11 or Bluetooth capable clients such as laptop computers, PDA (personal digital assistant), and the like. The said network can further comprise one or more connections to a wired network through one or multiple edge devices. The edge devices are equipped and capable of both wireless and wired communication. An example is shown in FIG. 1.

In a wireless transport network, efficient reduction of unnecessary broadcast traffic is critical. The transmission medium (the air) by nature is shared, therefore broadcast is a convenient way of communication in wireless networks for there is no need to transmit multiple times for a multi-destined frame. Once an originator broadcasts a frame to all its neighboring devices, all, or some, of its neighboring devices will have to relay the frame for other remote devices. For any device that is a neighbor of multiple devices that are responsible for relaying broadcast frames, it receives multiple copies of the same frame. One simple example is once a device sends out a broadcast frame, it immediately receives multiple copies of the exact frame if there are multiple neighboring devices perform relay function for the frame. Unless a filtering method is implemented on the devices, in the worst case one single broadcast frame may be duplicated in an exponential growth fashion and saturate the network and waste device processing time. In the worst case, these frames may loop around the network until the end of their lives.

Reducing the unnecessary broadcast frames can prevent frame looping, reduce total traffic amount hence preserve network bandwidth, and save device processing effort.

PRIOR ART

Prior art techniques in saving bandwidth on wireless network include software algorithms to select relay nodes for broadcast traffic, and maintaining sequence numbers of frames originated from each device to discard duplicates.

US Patent number 5,570,366 describes a method to filter frames from a wired network to a wireless access point via configured protocol parameters.

Present invention provides more efficient methods to filter unnecessary broadcast traffic and the techniques are more suitable to be implemented in firmware or hardware to enhance forwarding throughput.

US Patent number 6,549,786 claims the mechanism to set up a plurality of wireless nodes and a plurality of wired-wireless edge access points to form a local area network. The internetworking edge access points are used to relay traffic for wireless nodes unless the source and destination pair can communicate with each other directly. The wireless nodes actively select which access point it should be associated with, and determines whether it needs an AP's help to send messages. This addresses only the client-access point architecture and covers only basic connectivity issues.

SUMMARY OF THE INVENTION

Each wireless transport device calculates a table that each entry (FIG. 2) contains the neighboring device from which a broadcast frame originated from a particular device can be received. For broadcast frames originated from a particular device, only the frames relayed through the listed neighboring device can be accepted. Broadcast frames coming through incorrect neighboring device are duplicates and should be ignored. To facilitate the above filtering function, the broadcast frames have to carry the name or address of the originator wireless transport device. Note the frame may have come from a client of the wireless transport device therefore it is not the real source of the frame.

To filter out echo frames, broadcast frames have to carry the address information of previous hop in the transmitted frame so once the previous hop receives the frames, it can ignore these echo frames without further processing. For example, a device X either sends or relays a broadcast frame to its neighbors N1 and N2. When N1 and N2 relay the frame, they both add X in the "previous hop" field of the frame. Most likely device X will receive both these relayed frames from N1 and N2. With its address contained in the frame, device X can immediately realize it should drop the frames without processing.

Client membership announcement of a newly associated wireless client of a transport device is embedded into a broadcast frame the client generates, if it is the first frame from the client system. If the client is running common network layer protocols, the first frame is likely a broadcast frame. For example, in an IP network, the first frame from a newly booted up station usually is a broadcast frame containing either DHCP request or an ARP

request. The client membership announcement is piggybacked into the broadcast frame which saves the introduction of two different frames.

In case there are more than one edge device connecting the wireless network to a wired network, our invention is the election among the edge devices to enable only one edge device to relay broadcast traffic across the wired and wireless network.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an example of a wireless transport network.

FIG. 2 is an example of a broadcast receiving neighbor table.

Drawings

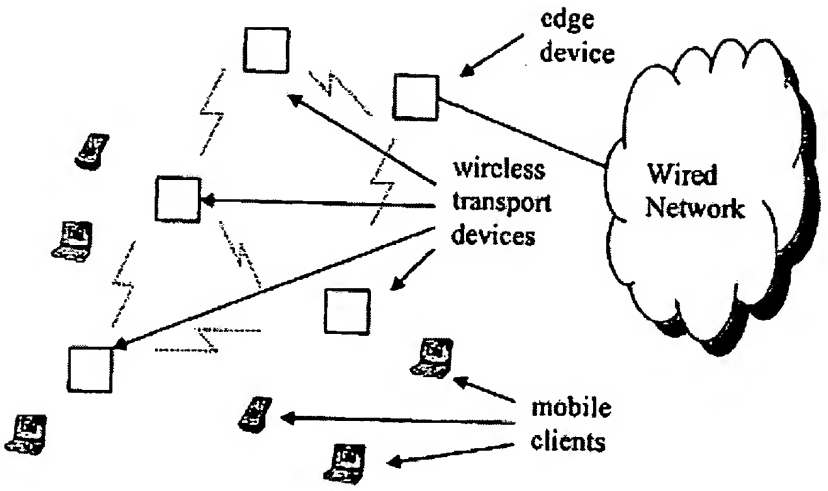


FIG. 1

Originator	Receiving Neighbor
Device 1	Device x
Device 2	Device y
Device 3	Device z

FIG. 2

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/18/2003 LWONDIH1 00000075 60495186
01 FC:2005 80.00 OP

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002 — 489-207/69030

(10) RELATED PROCEEDING APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. §41.37.